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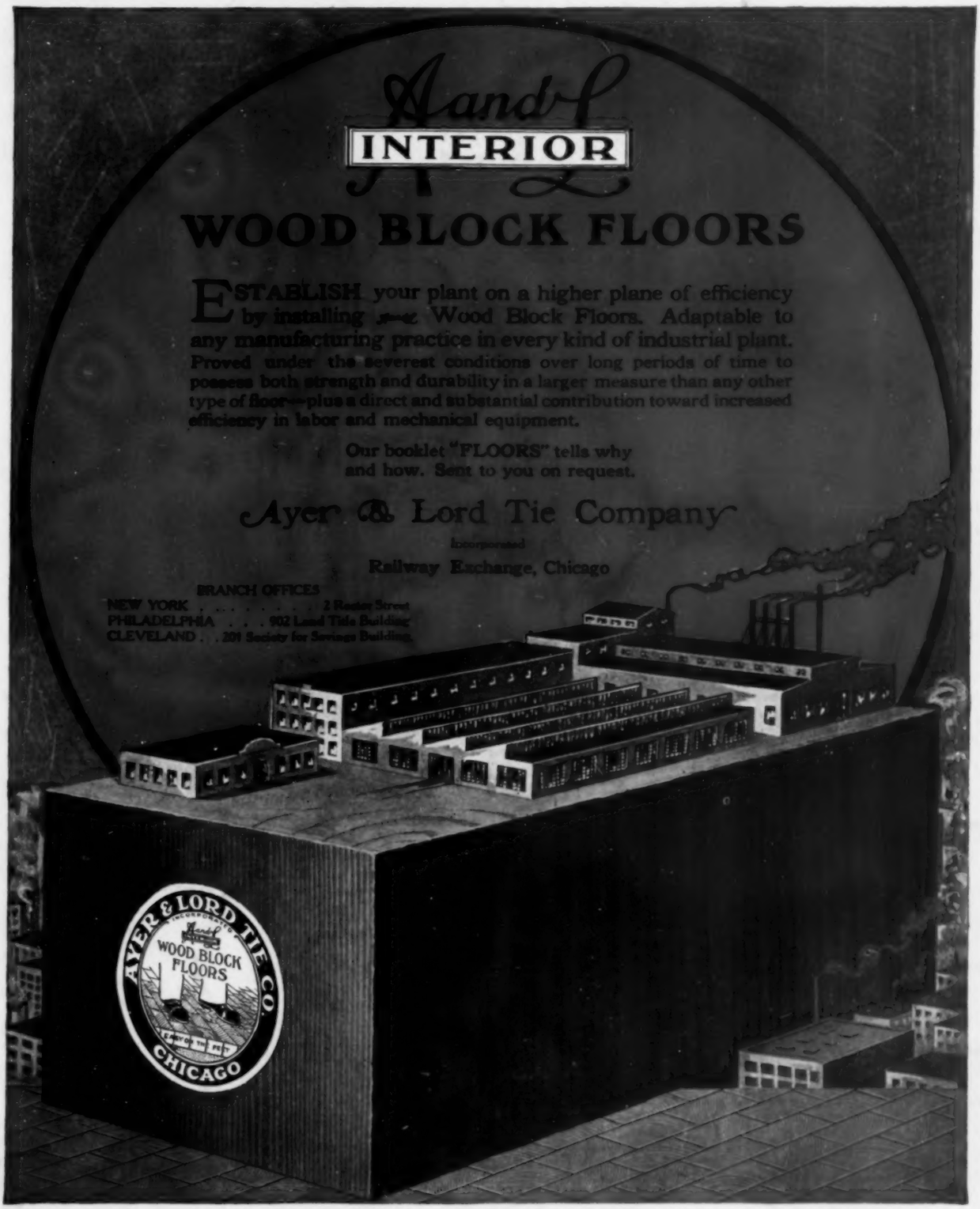
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UNION ARCADE BUILDING
PITTSBURGH, PA.

THE IRON TRADE REVIEW

Vol. LXIII Cleveland, September 26, 1918 *No. 13*

Important Events Affect Industry

Basic Eight-Hour Day Accepted by Steel Corporation and Expectation of Its Universal Adoption Involve Far-reaching Effects—Price Advances Announced by Presidential Edict and by Recommendation of Institute

LABOR, price and production developments of singular importance have marked a momentous week for the iron and steel industry. Chief among these because of its far-reaching and fundamental effects is the announcement of the Steel corporation of its acceptance of the basic 8-hour day for its plants. In the expectation that this establishes a precedent for the whole iron and steel industry the consequences promise to be extensive. As a wage advance the overtime feature will amount to approximately 10 per cent for a 10-hour day. The workmen have always favored a 10 or 12-hour day and may be expected to continue to do so under the new system. This reduces the possibility of the need of any considerable additions to the labor supply, which would be a difficult problem to solve under present conditions.

Price Advance Allowed

Some merchant furnaces estimate that the addition to production costs in their case from the 8-hour day will amount to $1.50 per ton. For that reason the advances on pig iron granted by the government for the final quarter of the year will come at an opportune time. This advance represents $1 addition to the base prices of No. 2 foundry and basic iron. The establishment of basing points in pig iron at Pittsburgh and Birmingham for certain producing districts allows the favored furnaces substantial additions to the $1 general advance on basic and foundry grades. For eastern producers, this additional allowance works out on an average of about $2.50 a ton; for the Virginia district about $2.50, and for the St. Louis district, $4.25. This new method of basing prices is aimed at bringing relief to those plants which have been having difficulty in making profits at present prices. The advance of 25 cents in Superior ores is less than the producers had petitioned for.

Production continues to be centered on certain lines of steel most essential to war, such as plates and shell steel. Rail output under the stimulus of demands occasioned by the allied advance in France has been materially increased.

Make Price Changes

Concurrently with the President's announcement of base prices for the final quarter of the year, the general committee of the American Iron and Steel institute has issued new recommendations representing changes in a large number of products. The most important of these is the advance of $3 in barbed wire and of $5 in cast iron pipe, and the raising of the differentials in many grades of pig iron.

Working for More Output

More systematic and determined effort is being made by the government to overcome the factors which have been restricting production of iron and steel. This is the basis for a series of conferences which is being held with groups of manufacturers in various lines by the steel division of the war industries board at which the fuel and transportation administrations are represented. It is hoped to effect a close working co-operation between the producers and all government agencies dealing with elements of production, which will solve many of the present operating difficulties. Particular attention is being given to pig iron where the effort is being centered on the raising of the production of the country to 42,000,000 tons annually. This is 4,000,000 tons in excess of the present rate of output. The extent to which pig iron production is not measuring up to capacity is the fact that the 371 blast furnaces now operating is the largest ever known under the modern conditions of the industry, yet the output is considerably less than in the record period of October, 1916, when 43 fewer furnaces were running. Conferences with manufacturers of pipe, plates and shell steel this week have been devoted to the production problem.

SEPTEMBER 26, 1918

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

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Muzzle the War Labor Agitator

CONSIDER for a moment the problem of labor organization in its relation to war work from this viewpoint: If you were to approach an American soldier and urge him to desert by telling him he was a fool to risk his life for a dollar a day and that he could obtain more money in some other and more pleasant and less dangerous pursuit the chances are you would be imprisoned, if you were fortunate enough to escape with your life. If you were to approach an American workman, whose production is just as essential to the interest of the nation as the soldier, and if you were to urge him to quit his job you would meet with no interference from the government.

The argument that the soldier is working for the government, that is, for himself, and that the workman in a war industry is working for private enterprise does not hold good. In this hour when all Americans are supposed to be making common cause against an enemy the workman is under the same responsibility as the soldier. The only distinction between soldier and workman is that the workman's lot is infinitely more pleasant, less dangerous and more remunerative. The soldier is risking all, the workman nothing. The soldier is offering his life on the altar of his country, the workman is enjoying all the prosperity of "good times."

There is no denying that the workman is entitled to fair wages. And the general impression throughout the country, based on visible evidence is that he is receiving a generous share of the profits accruing from war work. We have many instances where workmen in one locality strike to obtain the same wages as paid in the same industry in another locality, affirming that those wages are fair, while the workmen in the second locality are striking to obtain higher wages! The geographical difference may be but a few hundred miles, while there may be no difference in the cost of living. Such instances show that the primary purpose in many strikes is not to obtain "fair" wages, but to force employers to pay more wages. The financial risks taken by some industrial organizations, the years of worry and toil when the profits were small or there were none at all, do not count in the trade union's calculations.

There is something radically wrong in this system; it works an injustice to employers, regardless of what may be said of its advantages to labor. The evil is due to the government's policy of giving a too free-hand to labor agitators. The obvious solution of the problem is for the government to adopt the same restrictions as to enticing a workman from his work as applies to inducing a soldier to desert. A law forbidding one man to prevail on another to quit his occupation in a war industry would go infinitely further toward organizing this army at home in the interests of the nation than does the present system.

There is abundant evidence that labor is acting on the assumption that it has the whip-hand. It seems to be labor's confidence in governmental backing that prompts the display of large posters near certain plants, these posters bearing emblems of the United States and worded ingeniously to convey the impression of official sanction to a demand for higher wages. In the case of the A. M. Byers Co., the company, which was paying union wages, won the strike but the fact that it lost made no difference to the union. It immediately decided that under the right of collective bargaining it would put in a new demand for higher wages!

It is about time the government put an end to this sham. It has put all sorts of restrictions about the manufacturer and producer to prevent profiteering. If it cannot prevent labor from seizing this occasion to profiteer it would do well to extend some of the military regulations to this army behind the lines; it would have no trouble with the fair-minded American workman and it would put a quietus on the source of its chief draw-back to production, the walking delegate and the agitator who lives by sowing the seeds of discord.

Steel and the Shipyards

THE shipping board in its recent summary of shipbuilding progress during the past 13 months, supplies a record of industrial achievement which will inspire all Americans. From the muddle which he found as a result of the Denman-Goethals controversy, Chairman Hurley has evolved in barely more than a year, an organization which has placed the United States in the lead of all other nations.

Last month, the shipping board states, the United States definitely took rank as the world's largest shipbuilder. More shipways, more shipyards, more shipworkers, more ships under construction and more ships built every month, is the comparison which for the first time can be made with the United Kingdom—our former superior and leading competitor. The comparison is not and should not be made in any spirit other than one of congratulation that the two nations together are shoving the submarine into the discard as a major war factor. British yards have unfolded a wonderful story of naval construction during the past four years while her contributions in fighting men have entailed sacrifices of skilled laber in her great ship construction industry.

More than 3,000,000 deadweight tons of ships have been launched in the past 13 months, the average monthly rate for the last quarter being slightly more than 400,000 tons. Our best prewar year was 1916 with 285,000 tons; 1913 to 1916 inclusive witnessed the launching of only 805,000 tons. Shipworkers now form an army of 386,000 against a force of less than 50,000 in July, 1916. Speed of construction has become a familiar story, the record being the delivery of the 3500-ton steel freighter CRAWL KEYS in 34 calendar days or 29 working days by the Great Lakes Engineering Works, Detroit.

Ship deliveries, however, have not been organized to the splendid degree to which yard and ship construction has been brought. Of the 3,000,000 tons of ships launched, only 2,000,000 tons have been delivered in the form of completed ships. Against the monthly launching average since May 1 of 406,000 tons, deliveries have averaged only 273,000 tons. The problem is a familiar one to the shipping board, of course, and every effort is and must be made to expedite the construction of marine engines and auxiliary apparatus.

In this story of American achievement, steel manufacturers have played a leading role. Plate, bars and shapes have been fed to the constantly expanding yards in an abundance that is astounding. Distribution of this steel has been faulty at times—today in one district a number of building berths are empty, some since the middle of May, and this district will fall short of its 1918 program by 30 ships due to failure to receive steel. But in the question of tonnage aside from distribution, the steel mills have met the call of a huge, new customer in a manner that permitted the smashing of the Von Tirpitzian idea of winning the war.

William Kent, Engineer

FEW men are given the power of will or the quality of mind to master so many intricate subjects as William Kent. The extraordinary breadth of his experience and of his acquired knowledge is shown by the high position he occupied in many fields of engineering science. He was an authority on steam boilers; on machine shop practice; on scientific management and on cost accounting. His last work was a most comprehensive exposition of the theory and practice of cost accounting. Occasionally he was a contributor to THE IRON TRADE REVIEW. All his writings demonstrated a thorough grasp of his subject and they received corresponding recognition.

In practice he applied the principles of his profession with characteristic integrity. He took a large part in the development of steam boiler design. He was prominent in the preparation and adoption of the A. S. M. E. boiler code, the accepted standard of this country and of the world. He was led into these undertakings by his own field experience. He saw various deficiencies in the design and construction of steam boilers which had frequently resulted in loss of life. He recognized the opportunity to render an invaluable service which he did. Out of his great passion for the dissemination of engineering knowledge came the production of his engineering handbook which has become the lexicon for all mechanical engineers. The preparation of the engineers' pocket book was perhaps the crowning achievement of his life and years of arduous labor were spent in compiling it.

William Kent had a conception of the true engineer. He devoted unstintedly his unusual talent and scholarship to the practical profession and advancement of mankind. He had the preciseness of his profession to an exalted degree. He was a vigorous exponent at all times of correct engineering principles and practice. Not infrequently his tenacious convictions and advanced thoughts led him into acrimonious situations but this was due more to his ardent espousal of proper standards and scientific truths than to any combative side to his character. By his death the engineering world of today has lost one of its leading and most remarkable figures. But from his life's work, pursued under the inspiration of high ideals, there remain many enduring monuments of his career. The every day world, as well as the engineering profession has been greatly benefitted by William Kent having lived.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 756

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.60
Basic, Pittsburgh	33.40
Basic, eastern Pa.	32.00
Basic, Buffalo	32.00
Malleable, Pittsburgh	34.90
Malleable, Chicago	33.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	34.40
No. 2 foundry, Cleveland	33.00
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. Tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	37.10
No. 2 southern, Chicago	38.50
No. 2 southern, Phila.	40.10
No. 2 southern, Cleveland	38.50
No. 2 southern, Boston	41.00
No. 2 southern, St. Louis	39.75
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	37.60
Virginia, No. 2X, Jersey City	37.90
Virginia, No. 2X, Boston	38.20
Gray forge, Pittsburgh	33.40
Silveries, 8 per cent, furnace	45.50
Silveries, 8 per cent, Chicago	48.50
Low phos. standard, Phila.	56.00
Low phos. Lebanon, furnace	50.00 to 52.00
Low phos. Pittsburgh standard	54.40
Charcoal, Superior, Chicago	37.70 to 38.00
Charcoal, Superior, Buffalo	37.50
Charcoal, southern to 2 per cent silicon	50.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace	75.00
Ferrocarbon, titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, third quarter, Pitts.	150.00 to 152.50
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	150.00 to 152.50
Bessemer ferrosilicon, 10 per cent	55.00
Bessemer ferrosilicon, 11 per cent	58.30
Bessemer ferrosilicon, 12 per cent	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Besemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.50
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, Phila.	3.73c
Bar iron, Chicago	3.50c
Bar iron, Cleveland	3.67c
Bar iron, New York	3.745c
Bar iron, Pittsburgh	3.50c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$53.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
⅜ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	64.80
Six-inch and over, Chicago	61.80
Four-inch, New York	65.70
Six-inch and over, N. Y.	62.70
Four-inch, Birmingham	58.00
Six-inch and over, Birmingham	55.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Sept., per bundle	$1.95

RIVETS

Structural rivets, Pittsburgh	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets 7/16 in. and small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50-5 off
Cut thread	40-10-5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50-10-5 off
Cut thread	50-5 off
Larger and longer	40-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60-10-10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70-5 off
Gimlet and cone point lag screws	50-10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products September 25, average for August 1918, average for June 1918, and average for September 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Sept. 25, 1918	Average prices Aug., 1918	June, 1918	Sept., 1917
Bessemer pig iron, Pittsburgh	$ 36.60	$36.60	$36.38	$48.27
Basic pig iron, Pittsburgh	33.40	33.40	33.17	43.95
*No. 2 Foundry pig iron, Pittsburgh	34.40	34.40	34.17	48.95
*No. 2, Foundry pig iron, Chicago	33.00	33.00	33.00	49.50
Lake Superior charcoal, Chicago	37.70	37.70	37.50	59.50
Malleable, valley	33.50	34.90	34.67	50.57
Malleable, Chicago	33.50	33.50	33.50	49.50
**Southern, No. 2, Birmingham	33.50	33.50	33.50	43.50
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	49.25
Basic, eastern Pa.	32.00	32.00	32.00	49.50
**No. 2X Virginia, furnace	33.50	33.50	33.50	50.75
**No. 2X foundry, Philadelphia	34.50	34.50	34.25	52.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	378.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	73.75
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	82.50
Open-hearth sheet bars, Pittsburgh	51.00	51.00	51.00	82.50
Open-hearth billets, Pittsburgh	47.50	47.50	47.50	73.75
Steel bars, Pittsburgh	2.90	2.90	2.90	3.72
Steel bars, Chicago	3.17	3.17	2.90	4.10
Iron bars, Philadelphia	3.73	3.73	3.685	4.935

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon

	Prices Sept. 25, 1918	Average prices Aug., 1918	June, 1918	Sept., 1917
Iron bars, Cleveland	$ 3.64	3.64	3.64	4.50
Iron bars, Chicago mill	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.27	3.00	4.46
Beams, Pittsburgh	3.00	3.00	3.00	3.75
Beams, Philadelphia	3.23	3.23	3.185	4.435
Tank plates, Pittsburgh	3.25	3.25	3.25	6.81
Tank plates, Chicago	3.52	3.52	3.25	7.33
Tank plates, Philadelphia	3.48	3.48	3.435	7.75
Sheets, blk., No. 28, Pittsburgh	5.00	5.00	5.00	8.75
Sheets, blue anld., No. 10, Pittsburgh	4.25	4.25	4.25	8.50
Sheets, galv., No. 28, Pittsburgh	6.25	6.25	6.25	9.68
Wire nails, Pittsburgh	3.50	3.50	3.50	4.00
Connellsville furnace coke	6.00	6.00	6.00	9.62
Connellsville foundry coke	7.00	7.00	7.00	12.50
Heavy melting steel, Pittsburgh	29.00	29.00	29.00	35.50
Heavy melting steel, eastern Pa.	28.50	28.50	28.50	31.25
Heavy melting steel, Chicago	29.00	29.00	29.00	32.63
No. 1 wrought, eastern Pa.	34.00	34.00	34.00	44.50
No. 1 wrought, Chicago	33.50	33.50	33.50	40.50
Rerolling rails, Chicago	34.00	34.00	34.00	41.23

(For Additional Prices See Page 756.)

New Basing System Boosts Advance

Furnaces in East, in Virginia, Tennessee and St. Louis Will Profit Substantially from New Quoting Method—Allocations Continue to Represent New Bookings—Distribution of 1919 Tonnage is More Extensive

Pittsburgh, Sept. 24.—Lacking full details of the recommendations of the war industries board with regard to iron prices for the last quarter and also with regard to exactly what happened at the conference of pig iron interests in Washington on Monday, the trade here has not a clear conception of what the new arrangement means. How the provision will work out also is a matter of doubt in the minds of the trade. It is believed, however, that before the prices become effective on Oct. 1, the entire matter will have been thoroughly defined. There is one interesting feature in connection with the conference on Monday, and that is that those who attended this meeting returned quite fully satisfied that the government now has the various ramifications of control of pig iron supply and distribution and matters pertaining to fuel and transportation well in hand. The business in pig iron here continues to be entirely a matter of allocations. Few inquiries are made and those making them invariably are directed to apply to Washington, even when they apply to their regular source of supply. Some increase is noted in pig iron production as a result of more favorable weather and the fact that as a result of closer inspection of coke and the penalties imposed recently for shipments of inferior fuel, there has been much improvement in the quality of recent consignments.

Foundries Are Readjusting

New York, Sept. 23.—Considerable readjustment of the work at eastern foundries is necessitated as a result of the restriction, in effect or projected, of certain industries such as the breweries, plants manufacturing automobiles, etc. Foundries making castings for these industries or for makers of supplies for them are shifting their capacity to work of an essential character wherever possible. This development is beginning to be noticed by the furnaces, due to the fact that many of these foundries desire to change their specifications for iron. Eastern foundries, like all other employers, also are seriously handicapped by labor shortage and considerable tonnage output has been lost from this cause. These interests, as well as the blast furnaces, also are somewhat worried over the possibility that the extension of the draft ages may make further serious inroads upon their workers. Allocations of pig iron continue numerous. Although no heavy single tonnages are involved, the aggregate is large. Most of the allocations involve foundry iron, although some more malleable and low-phosphorus have been placed for shipment to eastern consumers. Included in allocations made through offices in this district, are numerous tonnages of Alabama foundry iron to be sent to the Pacific coast.

Benefit From New Base

Philadelphia, Sept. 24.—In accordance with the understanding with the price fixing committee of the war industries board which was officially promulgated by the presidential announcement of Sept. 24, eastern furnaces after Sept. 30 will quote the new base prices plus the freight rate from Pittsburgh to point of delivery. Virginia, Tennessee and Alabama furnaces will quote the new base price

plus the freight rate from Birmingham to delivery point. While the furnaces will lose on the shipments in direction of Birmingham and Pittsburgh, the belief of the producers is that the new method of quoting will improve their position considerably. The new basing point means an average increase of about $2.50 on pig iron to eastern Pennsylvania consumers, as the Pittsburgh-Philadelphia rate is $3.60 whereas the rate from eastern furnaces to Philadelphia is around $1 to $1.25. Monday meeting of pig iron producers at Washington developed that the chief obstacle of maximum output is poor quality of coke. Another important cause is the shortage of limestone. A third is the labor shortage. The latter, however, has been found to be less important than generally supposed. Important allocations of low phosphorus iron featured the week's market. The largest lot involved 18,000 tons of standard iron for the Bethlehem Steel Co. for first half. Numerous other first half allocations were made in this grade totaling a large amount. Foundry allocations also were numerous. Business in the latter during the week included several large tonnages for first half for consumers who will use the iron for Emergency Fleet and other essential work. Considerable first half basic has been bought by a large eastern plate maker but not enough to meet this country's requirements over that period.

Malleable Demand Very Strong

Buffalo, Sept. 23.—Foundry and malleable demand in this district continues greater than ever before in the history of the iron business. There is a particularly strong demand for malleable; any tonnage could be disposed of, but there is little on the market. Allocating is being done on a grand scale now and it forms about 90 per cent of the business. It is said that one furnace of the district is well sold up for first half of 1919 and most stocks are fairly out of the market on all grades for the remainder of this year. All of it is subject to government needs. One furnace is sold up for 1918 but is taking no 1919 business on the theory that the allocations will supersede it. The view is taken that the allocation is being well worked out by the government in a way that is helpful to the furnace interests. No great disarrangement of furnace plans has been made.

More 1919 Iron Allocated

Cleveland, Sept. 24.—More 1919 tonnage continues to appear in pig iron allocations. Of the 14,000 tons of low phosphorus iron included in the week's distribution, 12,000 tons were for the first half delivery. Some foundry and charcoal iron for 1919 shipment also were placed and 5000 tons of malleable were included. The week's allocations amount to 54,000 tons including 18,000 tons of malleable, 15,000 tons of foundry 14,000 tons of low phosphorus, 3000 tons of charcoal, 1600 tons of basic and 1500 tons of bessemer. This includes the total allocations made by the committee on pig iron, ore and coke since May 1, to 1,052,000 tons. Coke supplies with certain furnaces which have been uncertain making for irregular operations are better.

Advance Not Deemed Enough

Chicago, Sept. 24.—Without official and definite information as to prices on pig iron for last quarter delivery and provision as to basing points, unofficial statements that $1 per ton over present prices has been allowed is being taken as the truth. General dissatisfaction exists among producers that the increase was limited to this amount, as it had been hoped sufficient representation had been made to those in authority to induce a greater increase. It is generally believed that $1 additional will not cover added costs for material and labor on the part of furnaces not well situated as to their supply of raw materials. The provision for changing basing points from the former plan will give some additional return in some instances, but even this is not considered sufficient to meet the situation. The opinion is held by some well informed pig iron men that it will be necessary for some furnaces either to cease operation or ask the government to take over their plants and operate them. It is believed that in some cases actual cost of producing iron is several dollars above the new maximum prices. As is usually the case at the end of a quarter, when new prices are being agitated, business is slack both in bookings and in shipments. Much less iron is coming forward from the south and consignments of off iron, which have been fairly steady until recently, are now almost absent.

Buyers Hold Off

Cincinnati, Sept. 23.—Until a late hour this afternoon nothing had been heard from Washington as to the proposed changes in pig iron quotations. The talk about a change in quotations, that was only recently revived, has caused buyers to hold off sending in inquiries. The word has been passed along by the daily press that a change was impending and it was a natural result that the foundries wished to see exactly where they stood before trying to buy any more iron or to take contracts for castings. Transactions within the past few days have been almost at the zero mark.

Pinch Is Tightening

St. Louis, Sept. 21.—About the only plants in this district receiving pig iron now are those engaged in turning out government war work. Operations by foundries, mills and other consumers not on essential production are daily narrowing and in a number of instances will shortly cease. Customers have been informed that it is impossible to obtain raw materials, and they therefore need not expect deliveries of goods contracted for and expected during the remainder of this year. Stocks of finished material, such as stoves, beds, fixtures and other specialties, in first hands are rapidly disappearing, and jobbers and retailers are for the first time beginning to feel the pinch. Manufacturers of stoves, who have been able to eke out with scrap are now confronted with almost as acute a stringency in that market as in pig iron. Producers of basic iron have long since issued an ultimatum to nonwar customers in this region. For the past few weeks they have been shipping only on orders allocated by the government. Southern producers report stocks well cleaned out, and current production only sufficient to absolute war requirements. An East St. Louis plant with a B rating has been vainly inquiring for 1200 tons for delivery over the last quarter.

Output Is Improving

Birmingham, Ala., Sept. 24.—Every indication points to some improvement in pig iron production in Alabama. The Alabama company has blown out one of its Ironton furnaces and blown in the other at that place. One of the Gadsden furnaces is out because of the short coke supply but will resume shortly when the Lewisburg mines of the company again are on production. The Sloss-Sheffield Steel & Iron Co. has five out of seven furnaces going with one of the others in shape to go on, when the uncertainty as to raw material supplies is removed. Sales agents of iron companies of this district have informed the general offices in person or have sent word recently to the effect that consumers are virtually begging for iron and that in many instances the appeals are more than urgent. Some plants are beginning

to make preparations to shut down because of inability to get iron with which to operate. Very little iron, if any is being sold on the open market, the government allocating practically all of the tonnage now being entered. Foundry production in this state is giving way rapidly to basic, the greater number of furnaces now working on the latter grade.

Little Buying

Now Being Done In Ferroalloys—Spot Orders Predomenate

New York, Sept. 23.—Orders for moderate tonnages for spot shipment comprise most of the current business in spiegeleisen and ferromanganese. As a result of the buying movement several weeks ago, practically all consumers of these metals are covered for their requirements several months ahead. As a result, the market is expected to remain quiet for the next couple of months. The market is strong and prices are unchanged at $75 at the furnace for 15 per cent spiegeleisen and $250 delivered for 70 per cent ferromanganese.

Demand for 50 per cent ferrosilicon also is comprised mainly of small tonnages for spot shipment. The market on this metal may be quoted at $150 to $155 delivered.

Quote $3.50 Per Unit

Philadelphia, Sept. 24.—Practically all makers of ferromanganese now are asking a premium or penalty of $3.50 instead of $4 as previously, for each unit and below the 70 per cent content.

Trade at a Low Ebb

Pittsburgh, Sept. 23.—Trading in alloys has fallen to a low ebb. It is still impossible to verify reports of an easier tendency in 70 per cent ferromanganese; in fact, sellers here deny having shaded $250 for this alloy and while it is admitted that production has gained considerably in the past three or four months, prompt deliveries only occasionally are possible. Small sales of 16 per cent spiegeleisen are being made daily at $75, furnace, either spot or future delivery. Some inquiry is noted for 50 per cent ferrosilicon, but makers seem indifferent about taking contracts at present. A few cars of ferrochrome have changed hands recently at 55 cents per pound.

Extensive plant improvements are planned by the Belfont Iron Works Co., Ironton, O., and Frey, Brassert & Co., Chicago, engineers, have been retained to have charge of the work.

Coke Quality is Improving

Complaints from Furnaces Are Fewer—Good Production Records Being Sustained—Deliveries Are Better

Pittsburgh, Sept. 24.—Fewer complaints are heard about the quality of coke than recently and this and the steady gain in the Connellsville shipments stand out as the conspicuous recent developments in the coke situation. The combined coal and coke tonnage of the Connellsville region is making records almost every week. In view of the fact that both mining and coking operations are seriously hampered by the scarcity of labor, this showing speaks volumes for the manner in which the men are staying on the job. The car supply is quite adequate. In fact, the transportation situation leaves almost nothing to be desired, except that the Pennsylvania railroad has imposed restrictions on the use of its battleship coke cars to the extent of not permitting them to leave its own lines. This has resulted in some eastern furnaces not securing a full fuel supply, but the cases are too few to be important. Blast furnaces are getting an ample but not an excessive supply of coke and if the Connellsville output was running up around 375,000 tons weekly instead of around 340,000 tons, these interests would probably feel a little more comfortable. As it stands, they are little worried lest there might be a repetition of last year's mid-October blizzard, which resulted in so many furnaces being banked for want of sufficient fuel supplies. Production of coke for the week ended Sept. 14, in the Connellsville region was 348,330 tons, against 345,210 tons in the previous week, according to the *Connellsville Courier*.

No Incentive to Buy

Cincinnati, Sept. 23.—Price regulation seems to have taken all of the "ginger" out of the coke market. The furnaces know that they will be supplied, if the ovens are able to produce the fuel, because of the urgency of the work they have in hand. Some foundries are also not giving much thought for the future, but most of them are trying to get all the coke they can for taking care of their needs in the cold weather period when transportation difficulties are to be contended with. Domestic coke is hard to get, although there is a big demand for it. Connellsville shipments of both furnace and foundry coke are improving and it is only the question of labor that is holding back deliveries in a few instances. So far the coal supply to the ovens is said to be fairly satisfactory. Wise county and New River districts are shipping some coke to this territory, but the amount is gradually diminishing from the latter. Pocahontas shipments are about normal, but prospects are that very little fuel can be had from this district later on.

Deliveries Are Satisfactory

St. Louis, Sept. 21.—An adequate supply of freight cars has been reflected in very satisfactory deliveries of coke in this district from Connellsville and other eastern fields. War industries are getting ample supplies and there is less complaint from the general run of consumers. The general demand, however, continues enormous, and dealers report virtually no free coke for sale. Efforts are being made by buyers to contract through the last quarter of this year and through the first quarter of 1919. Testimony this week in the application of the Laclede Gas Light Co., the leading by-product interest in this district, developed that that company is tied up with contracts at a low figure for coke and other by-produ... which eliminate most of its profits. The company sold at $5 245,000 tons of high grade coke the government maximum on which is $9.90 f.o.b. plant.

Demanding Full Production

Birmingham, Ala., Sept. 24.—Coke production in Alabama goes up and down weekly. The loss of operations at the ovens of the Alabama Co. at Mary Lee, because of the recent cloudburst still is being felt. The mines have resumed operations and within another week the ovens will be in full operation again. All coke produced in this state is being absorbed readily. Revision in the price of coke recently announced is satisfactory. Every oven in shape in the district is being operated. Coal production in Alabama has not been up to expectations lately. For the week ending Sept. 14 the output was 385,621 tons against 392,939 tons for the week ending Sept. 7. Figures are now being received as to the production for the week ending Sept. 14 and an increase is looked for. From now on it is expected there will be a weekly production of more than 450,000 tons.

Scrap Problem Unrelieved

Shortage, Already Severe, Increases Weekly—Less Insistent on Specifications—Turnings Sales Active at Pittsburgh

FOR COMPLETE SCRAP PRICES SEE PAGE 756

Pittsburgh, Sept. 24.—Some fair sized transactions were noted in scrap iron and steel but much larger sales might be made if the supply were greater. While some consumers are fairly well off in the matter of supplies, few have any kind of a stock for winter use. Some shipments continue to come into this district from outside points, among recent such transactions being one of 1000 tons of machine shop turnings and 500 tons of borings, both at $19 plus commission of 3½ per cent and the freight differential. The sale of 3000 tons of heavy shell turnings to a Pittsburgh district consumer has been made at $24 plus commission. In the past week fully 15,000 tons of turnings have changed hands. Some open hearth furnace interests have requested an extension of the embargo on the shipment of turnings to blast furnaces which expired Sept. 21. This movement, however, is by no means general and there are some open hearth interests who have secured fairly good reserves. Some opposition to the extension is developing on the part of blast furnace interests and their contention is given some weight by the efforts on the part of the government to increase the production of pig iron. Recent permission granted iron rolling mills to pay up to $21 a ton for borings and turnings applies chiefly to eastern Pennsylvania mills which must have soft scrap in puddling operations.

Rolling Mills Buying

New York, Sept. 23.—Aside from the lifting of the embargo on shipments of borings and turnings to blast furnaces, the situation in the eastern scrap market is practically unchanged. Demand is holding up well for all grades, taking whatever supplies are offered. Rolling mills are still buying borings and turnings in this market at the new price of $21, f.o.b. consuming point; how much longer they will be allowed to do so is not known. The trade generally is showing little concern as to the outcome of the price fixing conference at Washington, as it believes no changes will go into effect in scrap.

Speculation is Absent

Buffalo, Sept. 23.—It is not expected that any further changes will be made in scrap prices for last quarter, particularly in an upward direction. It is felt, however, that in view of the fact that rolling mills obtained a ruling permitting an excess price to be paid for turnings and borings, similar rulings to take care of other branches of the industry are looked for, should they be unable to secure the scrap material they require at the present government price. Demand continues good and material scarce. The sales that are being made are of materials which dealers have absolutely on hand. No short sales are being made. For the first time in the history of the trade, there is an entire absence of speculating and short selling. Dealers are having difficulty in obtaining tonnage to apply on old sales. Scrap yards are finding difficulty in holding laborers.

Continue Turnings Order

Cleveland, Sept. 24.—The scrap iron and steel subcommittee's ruling denying blast furnaces turnings for 30 days has run its official life but in the absence of any new statement on the situation most dealers here are continuing the order. Advices from the east make the scrap interests here believe that third quarter prices will be continued over the fourth quarter. The increase in pig iron will not affect the market to any appreciable extent, it is believed, for about all the scrap that is available is now coming out, and with most prices at the government maximums or virtually there, dealers' profits are largely a matter of the 3½ per cent commission. A few big consumers here have fair-sized stock piles, but the majority have little material against the coming winter. Car service is adequate but to the east, and especially through Pittsburgh, shipments are delayed fully a week. Melting steel and low phosphorus continue strong; in fact every grade may be said to be stronger than a week ago. Dealers have not yet heard through official channels that a $21 price has been put on borings and turnings for bar iron mills.

Must Use Substitutes

Chicago, Sept. 24.—With a tremendous demand for all grades of iron and steel scrap and a much lessened supply, dealers are unable to provide sufficient tonnage to meet needs, but have no difficulty in placing every carload they can obtain. Not only is it impossible to provide as much scrap as is needed by consumers, but often a dealer is unable to find sufficient to cover his obligations on tonnages already under contract. It is necessary for dealers to sell tonnages beyond what they actually own, thus creating a short interest. In some cases consumers are buying direct from producers and from country dealers, which further reduces the tonnage moving through the market. Under these circumstances the consumer of heavy melting steel in the open hearth is confronted now by the necessity for making a contract allowing the dealer to ship in other grades of steel which can be so used including compressed sheets, busheling, miscellaneous short rails, bolsters and other forms. Only in this way is it possible to obtain anything like a sufficient supply. Railroad offerings are somewhat better. The Rock Island offers 2000 tons, the Santa Fe 1830 tons, the Chicago, St. Paul, Minneapolis & Omaha 765 tons and the Chicago Great Western 600 tons.

Yard Stocks Depleted

Cincinnati, Sept. 23.—Yard stocks are being drawn on so rapidly that it is now a foregone conclusion that receipts from outside sources will not be able to keep up with the demand. Labor is also so scarce and unreliable that much delay is experienced in sorting and loading. Borings and turnings are very much firmer on account of the report that dealers may now charge $21 per gross ton delivered. The consumption of cast borings is so limited in this district that this change may only bring about a small readjustment.

Freight Raise Set Aside

St. Louis, Sept. 21.—Consumers and dealers report a growing scarcity of every grade of scrap, and an unprecedented demand. Astonishingly small tonnages are coming into sight, and a number of rolling mills and foundries are suffering actual want. At the moment cast iron is in particularly strong demand. Everything which stove makers can use has been bought up, and this industry is making strenuous efforts to get in deliveries on contract material in order to maintain its curtailed output. Offerings by the railroads are diminishing right along, not a single list being before dealers this week. The large increase in rates, amounting to as high as 600 per cent on scrap, by the St. Louis Terminal association,

has been set aside by the interstate commerce commission, so that yard men here are much relieved. The old rate is restored and the increase, which had been paid under protest, will be refunded. Included in the sales this week was 400 to 600 tons of old horseshoes at close to the government's maximum of $33.

New Price Is Limited

Philadelphia, Sept. 24.—Many thousand tons of turnings have been sold in this district during the past week under the recent authority granted to certain rolling mills to pay $21 for soft steel and wrought iron turnings. The scrap subcommittee in a letter explains that this allowance has been given where bar iron mills were working on Emergency Fleet corporation contracts and were on the point of being shut down for lack of this particular metal. No purchasing permit will be issued after Sept. 28, unless special conditions again demand. The business in turnings was the principal trading of the week. All grades are scarce. One mill which normally maintains heavy melting steel stock, adequate for 20 to 30 days consumption now only has three days' supply on hand.

Stocks Still Accumulating

Birmingham, Ala., Sept. 24.—Not willing to sell unless there is a better price forthcoming, dealers in scrap iron and steel in the south are beginning to accumulate some stock.

New Rulings

Expected to Cut Tin Plate Output Still Lower

Pittsburgh, Sept. 24.—Supplies of tin bars are still sufficient for a fairly full operation of the tin plate mills, but a quick drop to a 70 per cent basis is looked for on Oct. 1, and a new order is expected that may result in an even lower rate of operations. It turns out that the manufacturers of food containers are not only likely to be well covered by the first of the month, but some of them will have an oversupply. This is due to the fact that a rather big percentage of the tomato crop went to waste owing to the lack of sufficient canning factory help. No word has been received concerning the shipments of tin plate for the manufacture of containers for dried beans. Shipments for this purpose were forbidden until Sept. 15, but the embargo has not yet been rescinded officially. Some word is expected to be given in the new order about tin plate, about which no real information is yet obtainable.

Plates Have Right of Way

Nothing Allowed to Interfere With Output—75,000 Tons for Ships Before Market—Steel Corporation Sells at Loss

Chicago, Sept. 24.—No consideration is allowed to interfere with the production of ship plates at fullest capacity and it is understood recent contracts for building of further ships carry a heavy tonnage of plates which will be allocated as soon as an opportunity is seen for placing on mill books with any possibility of reasonable delivery. It is understood one shipbuilding contract calls for approximately 75,000 tons of plates, which have not yet been placed with producers. Other tonnages are also imminent and probably will be allocated shortly.

Corporation Buys Tonnage

Philadelphia, Sept. 24. — Eastern plate mills are now operating from 80 to 90 per cent. Aside from allocations which continue in good volume, only sales including tonnages to be rolled by a new 72-inch mill just operated in the Youngstown district. It is reported that the Steel corporation, by arrangement with the war industries board, recently hase been buying plates from small makers at higher than the government maximum price and has been selling them to consumers for essential use at the government price. The Steel corporation is understood to take this method to enable some smaller producers to operate with some profit.

Production is Full

Pittsburgh, Sept. 24.—Mills rolling plates in this district are engaged to full capacity and production continues to climb. Not only is the weather favorable for mill operations but the continued diversion of steel from other purposes is finding reflection in the output of plates. Free shipments are going forward to the shipyards and to the car builders, as has been the case for the past few weeks It is said that these interests are fairly comfortable in the matter of supplies.

To Distribute Ore

To Furnaces Whose Stocks Are Low —Now Investigating Reserves

Cleveland, Sept. 25.—Iron ore from the Lake Superior district from now on will be distributed to consumers whose stocks are low. Shipments so far this season have been well up to schedule but the tonnage moved is sufficient only to supply each stack with enough ore to continue operations until the 1919 navigation season. In other words, some furnaces cannot be overstocked without lowering the supplies for other stacks below actual needs.

Investigation is now being made to determine the exact ore supplies at the various furnaces served by the Lake Superior district. As a result of this investigation, future shipments will be allotted. first to those furnaces with insufficient reserves. This distribution is under the general supervision of the mobilization committee which has been active all season in distributing vessel tonnage and ore tonnage in the most effective manner. The generally satisfactory condition in which blast furnaces are found today, is largely the result of the efficient direction of the lake freight during the past few months. The record is all the more creditable in view of the absence of new vessel construction for lake service and of the removal of considerable vessel tonnage from the lakes during the past few years.

The original shipping schedules as made up at the beginning of the season, call for the movement of 80 per cent of the tonnage by Oct. 1. shipments to date run slightly above those for 1917. Increased demands of the coal and grain trades will retard ore movement from now on, but the season's total should approximate the 1917 figure. Last year 62,498,901 gross tons were moved by lake. Estimated minimum requirements of the blast furnaces called for about 65,000,000 tons this year, but a lake movement of from 60,000,000 to 62,000,000 tons is thought to be sufficient to keep all stacks in operation until next summer, depending largely of course upon proper distribution.

On the basis of furnace requests, the movement to date is from 2,000,000 to 3,000,000 tons behind schedule. Investigation now being made is expected to lower the total of these requests by 1,000,000 tons, as various stacks are known to have larger reserves on hand now than was anticipated earlier in the year.

Shipping schedules for October and November call for the movement of 13 per cent of the season's total in October and 7 per cent in November. Ore shippers are confident this will be done despite the movement of one of the largest grain crops on record.

Merchant Bars Curtailed

Output is Cut Further to Provide Steel for Rails—Discard Bars Continue in Active Demand

Chicago, Sept. 24.—Production of soft steel bars for general use has been further curtailed. In order to produce an increased tonnage of standard steel rails it has been necessary to divert ingots from bar mills to rail mills and inasmuch as production of shell bars cannot be lessened, the reduction in output is being taken from ordinary bars. This situation makes the possibility of most users obtaining further bar supplies exceedingly remote.

Bar iron manufacturers are in a comfortable position, with sufficient tonnage to carry them well into fourth quarter. Export tonnage continues to be taken, but whatever is shipped after Oct. 1 must have a priority certificate, as well as an export license. Buying of chain iron continues as eastern mills are unable to supply their regular customers.

Hard steel bars rerolled from rails are practically off the market as the supply of old rails for rerolling is increasingly scarce. Mills now are able to buy such rails as are offered only by the use of their resources of friendship and business connnections. The main building of the rerolling mill of the Inland Steel Co., at Chicago Heights, was burned Sept. 18, but the mill was put in service again Sept. 23 and will continue steady operation.

Announcement has been made to agricultural implement and vehicle manufacturers that the government has ordered 25 per cent reduction in output in this industry. As a result buying of raw material will be on that scale. This will reduce demands for steel bars and other materials entering into agricultural implements.

Discard Bars Active

New York, Sept. 23.—Export orders for iron and steel bars now are receiving no attention by eastern mills unless they bear A priority numbers. This applies particularly to shell discard bars, which now comprise practically all the steel bar business being booked from abroad. Eastern makers of shell discard bars and iron bars continue to book orders from domestic consumers, but due to the large tonnage on their books, A orders are the only ones which can be regarded as assured of delivery. Practically no business in mild steel bars is being booked.

No Advice On Concession

Cleveland, Sept. 24.—While as previously published, it was announced at recent meeting of implement manufacturers in Chicago that the special concessions of $5 a ton on bars and corresponding reductions on other products had been granted to that industry, mill representatives in this district have not received formal notification from their principals to apply these prices. One representative was advised this week that the matter had not been positively settled from a mill standpoint and when this was done, he would be notified. Under present conditions, therefore, the concessions have not yet been applied to implement consumers in this territory.

Production is Low

Pittsburgh, Sept. 24.—Operations of merchant steel bar mills are not better than 50 per cent of capacity, the supply of steel not being sufficient for any more extensive running of the rolls. Direct and indirect government orders are taking the bulk of the output. Good demand exists for iron bars, with the supplies for other than essential needs limited, owing to lack of sufficient labor.

Bolt Makers Loaded

Chicago, Sept. 24.—Manufacturers of bolts and nuts still have sufficient orders ahead to prevent their taking further business and inquiries are being refused except in a few cases of regular customers who had not covered fully in previous buying. Considerable difficulty is being met by some bolt makers over receipts of raw material.

Rivets Are Distributed

Philadelphia, Sept. 24.—Part of an inquiry for 15,000 tons of rivets for the Hog Island shipyard has been distributed among seven producers. The remainder will be placed shortly. Bar iron makers are asking customers to classify all orders placed prior to June 30. Orders not classified receive the lowest priority number.

Output Further Curtailed

Pittsburgh, Sept. 24.—Scarcity of steel continues to curtail the output of cold rolled shafting and it is doubtful if the mills are now running better than 50 per cent. Practically all of this output is going into governmental work which calls chiefly for the larger sizes. Demand for shafting for pleasure automobiles has practically ceased but there is a growing demand for trucks and military vehicles.

Sheet Output

Continues to Be Reduced—Discard Product Being Sold

Youngstown, O., Sept. 25.—Heavy demand for ship plates and shell steel continues to limit the output of sheet bars at valley mills. But in spite of this enough bars are being made to keep sheet mills partially occupied. Not long ago the government requested sheet bar makers to roll a certain monthly tonnage which, as was calculated, would keep nearby sheet mills in operation at near 75 per cent of normal practice. Had this arrangement not been mapped out when the sheet bar shortage began to present itself, it is doubtful whether some sheet mills in this district would be in operation today. However, the sheet bar situation as far as sheet makers here are concerned, is still critical. Independent sheet makers not operating bar mills are well pleased with their sheet bar supply. Many of them have adopted the plan of booking class A priority orders only and as a result their supply of bars has been steady. It is rumored that one maker not in this district has been disposing of sheets at prices higher than those fixed by the government and has been notified to appear before an investigating committee.

Western Mills Sell

Philadelphia, Sept. 24. — Eastern sheetmakers are not making many shells but western makers are booking orders for blue, black, galvanized and shell steel sheets. They are able to fill Class A orders for delivery in 15 to 60 days depending on specifications.

Output Is On the Drop

Pittsburgh, Sept. 24.—Scarcity of sheet bars and also to some extent a lack of labor are reflected in a lower rate of operations than recently at the sheet mills. Fifty per cent is now maximum average capacity and with practically all of this limited tonnage needed for the filling of high priority orders, the wants of the jobbers are getting almost no attention. Further curtailment of the supply of sheet bars is expected.

Ore and Pig Iron Granted Advance

President Approves 25 Cents Addition to Lake Ore Schedule and $1 Advance on Basic and Foundry Iron—New Iron Basing Method Will Materially Raise Price for Certain Producers

The President's Announcement

THE President has approved the agreement made by the price fixing committee of the war industries board with the representatives of the iron ore, pig iron and steel interests, that the maximum prices now prevailing on iron ore, pig iron and iron and steel products be continued in effect for the three months ending Dec. 31, 1918, with the following exceptions:

IRON ORE

Base prices of Lake Superior iron ore delivered to lower lake ports are increased 25 cents per gross ton on and after Oct. 1, 1918, subject to the following conditions: These increased prices are based on the rail freight rates now in effect and on the present lake rates and in the event of any increase or decrease in either rail or lake rates, said prices shall be increased or decreased accordingly on all deliveries made during the continuance of such increased or decreased freight rates.

PIG IRON

The base price on basic iron is increased to $33, f.o.b. furnace. The base price on No. 2 foundry iron is increased to $34, f.o.b. furnace. The price of standard bessemer iron is fixed at $35.20 f.o.b. furnace. The above prices are subject to the following changes from previous practice as regards delivery.

(A) Pig iron produced in the Virginia, Tennessee and Birmingham districts and the scattering districts south of the Ohio and Potomac rivers, including furnaces at St. Louis, Mo., but not including furnaces bordering on the Ohio river, shall be sold on an f.o.b. Birmingham, Ala., basis.

(B) Pig iron produced in the eastern district, if from all blast furnaces located east of the Allegheny mountains and north of the Potomac river, shall be sold on an f.o.b. Pittsburgh basis.

(C) Pig iron from all other producing districts or furnaces shall be sold f.o.b. furnace as heretofore.

No new contracts calling for delivery of any of the above commodities or articles on or after Jan. 1, 1919, are to specify a price unless coupled with a release making the price subject to revision by an authorized United States government agency, so that all deliveries after that date shall not exceed the maximum price then in force, although ordered or contracted for in the meantime. It is expected that all manufacturers and producers will observe the maximum prices now fixed.

ADVANCED base prices on pig iron and iron ore will be in effect for the three months ending Dec. 31 of this year under the authority given by the official announcement of the President issued Sept. 24. No changes were ordered in the base schedule of steel products as fixed by the government.

The statement of the President represented his approval of the recommendations made by the price fixing committee of the war industries board following the two-day conferences between that body and iron and steel manufacturers at Washington last week. At that time the situation covering the varied costs of the different producers and other price factors bearing upon production were gone into very thoroughly. The recommendations and subsequent adoption of basing points on pig iron for producers in certain districts was one of the most interesting features of the price settlement. This new method of quoting is designed to bring relief to those producers in certain districts who have been unable to conduct their operations at a reasonable profit under present prices. This basing fixture added to the $1 general advance in basic and foundry will result in total advances ranging from $2 to $5.25 for the different individual plants.

The 25-cent advance approved on Lake Superior iron ore is understood to represent only one-half of the minimum increase requested. The ore men had in mind an advance ranging from 50 cents to $1. The latter figure is said to be the minimum necessary on 1919 business. Old range bessemer ore after Oct. 1 will be $6.25; Mesabi bessemer, $6.40; old range nonbessemer, $5.75. The increase adds about 50 cents to pig iron costs.

The steel manufacturers, as far as a general increase was concerned, were silent at the conference and as usual failed to put in expected claims for increased price maximums. The advance in pig iron was fully expected to bring at least an increase in basic steel, blooms, billets, etc., as it was evident, from what had been learned before, the manufacturers who have to buy their pig iron would be embarrassed without some price relief. J. V. W. Reynders, president of the American Tube & Stamping Co., Bridgeport, spoke for this class of manufacturers, but apparently without avail. This move, however, may be regarded as a forerunner of another which may come at the close of the next quarter to affect the prices to start off the new year.

The usual governmental agencies were represented in the price fixing committee and took part in the discussions, particularly those in executive session. The representatives of the industries at the conference included: E. H. Gary, James A. Farrell and W. J. Filbert, United States Steel Corp.; E. G. Grace, Bethlehem Steel Corp.; A. G. Dinkey, Midvale Steel & Ordnance Co.; Willis L. King, Jones & Laughlin Steel Co.; C. R. Robinson, Lackawanna Steel Co.; A. H. Woodward Iron Co.; James B. Bonner, American Iron & Steel institute; H. G. Dalton, Pickands, Mather & Co.; L. E. Block, Inland Steel Co.; H. J. Watt and H. F. Knapp, American Iron and Steel institute; John A. Savage, J. D. Ireland, T. D. Heed, W. L. Trinker and D.

B. Warren, Lake Superior Iron Ore association; James A. Campbell, Youngstown Sheet & Tube Co.; E. A. S. Clarke, Lackawanna Steel Co.; D. T. Croxton, William H. Lindsay, John B. Newton, John A. Penton, E. N. Rich and W. A. Barrows, Jr., Associated Manufacturers of Merchant Pig Iron; T. W. Friend, Clinton Iron & Steel Co.; C. E. Bertie, Virginia Iron, Coal & Coke Co.; Francis J. Hall, Central Iron & Steel Co.; W. P. Worth, Worth Steel Co.; David Reeves and A. H. Cordrey, Phoenix Iron Co.; J. V. Q. Reynders and Jos. F. Savage, American Tube & Stamping Co.; Samuel Hale, Interstate Iron & Steel Co.; Roy A. Rainey, W. J. Rainey estate; S. J. Llewellyn, Interstate Iron & Steel Co.; J. E. Frederick, Kokomo Steel & Wire Co.; William P. Snyder, Jr., Shenango Furnace Co.; A. F. Huston, Lukens Steel Co.; Leonard Peckitt, Empire Steel & Iron Co.; W. S. Pilling, Northern Iron Co.; Thomas K. Glenn, Atlantic Steel Co., and H. G. Moore, Keystone Steel & Wire Co. This was one of the most representative price meetings yet held.

Institute Makes New Price Statements

CLOSELY following the President's price announcement applying to the final quarter of the year, the general committee of the American Iron and Steel institute issued numerous recommendations of changes in various products effective Sept. 24. The most important of these were an advance of $3 a ton in the price of barb wire, an advance of $5 in cast iron water pipe, new differentials in several grades of pig iron and a number of changes in the differentials, extras and foot notes in a number of other lines. The working of the warehouse schedule has been clarified and tables showing its application are presented.

In pig iron, new differentials in malleable have been established. Malleable iron not over 2.25 silicon will continue to take the differentials of 50 cents over base previously shown. Iron containing from 2.25 to 2.75 silicon will take $1.25 per gross ton and iron containing 2.75 to 3.00 silicon will take $3 per ton. The differentials on foundry pig iron, high silicon or silvery iron, bessemer ferrosilicon and on northern semi-cold charcoal iron have been advanced in a varying degree. It is announced that the new basing points of Birmingham and Pittsburgh for certain districts do not apply to either charcoal or low phosphorus iron. Prices for these irons will continue to be f.o.b. furnaces as heretofore, no matter where the furnace producing them is located.

In announcing the new prices and differential Chairman Gary, of the committee on steel and steel products of the American Iron and Steel institute, made this statement:

The agreement made by the price fixing committee of the war industries board with the representatives of the iron ore, pig iron, and steel interests, approved by the President and announced under date of Sept. 23, 1918, increases prices of Lake Superior iron ore, and base prices on certain grades of pig iron, and makes changes from previous practice as regards delivery of pig iron; all to be in effect for the three months ending Dec. 31, 1918.

The committee on steel and steel products has received from a subcommittee reports based on information received from representative manufacturers of various lines of steel and steel products, and from such reports and other data available, the committee has concluded that certain changes and modifications in the maximum prices, differentials, extras, etc., as heretofore recommended by the institute, are fair and reasonable; and the committee recommends that such revised maximum prices, differentials and extras be adopted to take effect on and after Oct. 1, 1918.

The above mentioned increased prices and changes approved by the President, as well as the revised maximum prices, differentials and extras recommended by this committee, are covered by the following:

Iron Ore

The base prices of iron ore and notations in regard to differentials, etc., as shown on page 37 of the institute pamphlet (Iron Trade Review booklet page 14), of August, 1918, are superseded by the following:

IRON ORE

By agreement with the war industries board, approved by the President Sept. 23, 1918, prices of Lake Superior ore were advanced, effective Oct. 1, 1918, as shown in the following table:

Grades	Per cent Natural Iron	Per cent Phosphorus (ore dried at 212° F.)	Price at Lower Lake Ports
Old Range Bessemer	55.00	.045	$6.65
Mesabi Range Bessemer	55.00	.045	6.40
Old Range non-Bessemer	51.50	...	5.90
Mesabi Range non-Bessemer	51.50	...	5.75

The above prices are subject to the customary differentials for variations in quality and analysis.

The advanced prices are subject to the following conditions, viz:

"These increased prices are based on the rail freight rates now in effect, and on the present lake rates, and in the event of any increase or decrease in either rail or lake rates said prices shall be increased or decreased accordingly on all deliveries made during the continuance of such increased or decreased freight rates."

Prices of iron ores from other than Lake Superior districts **were not advanced** and continue to be based on the prices approved by the President Sept. 24, 1917, with the customary differentials, according to the district, that have heretofore obtained.

Pig Iron

Cancel page 38 of the institute pamphlet (Iron Trade Review booklet page 16) of August, 1918, and substitute therefor the following:

PIG IRON

(Base prices approved by President Wilson, Sept. 23, 1918)

Base price for No. 2 foundry pig iron, f. o. b. furnace, per gross ton.....$34.00

Base price for basic pig iron, f. o. b. furnace, per gross ton 33.00

Base price for Bessemer pig iron, not over 3 per cent silicon, f. o. b. furnace, per gross ton. 35.20

The above prices are subject to the following changes from previous practice as regards delivery:

(a) Pig iron produced in the Virginia, Tennessee and Birmingham districts and the scattering districts south of the Ohio and Potomac rivers, including furnaces at St. Louis, Mo., but not including furnaces bordering on the Ohio river, shall be sold on an f. o. b. Birmingham, Ala., basis.

(b) Pig iron produced in the eastern districts, i. e., from all blast furnaces located east of the Allegheny Mountains and north of the Potomac river, shall be sold on an f. o. b. Pittsburgh basis.

(c) Pig iron from all other producing districts or furnaces shall be sold f. o. b. furnace as heretofore.

The grade of No. 2 foundry iron to be equivalent in analysis to:

Silicon .....1.75 to 2.25
Sulphur .....Not over 0.05

No. 2 soft southern iron equivalent to No. 2 foundry of same silicon content.

Differentials from the above base price for No. 2 foundry iron to be made for the following grades:

Forge or mill iron..$1.00 per gross ton under base
Malleable iron not over 2.25 silicon .....$0.50 per gross ton above base
Malleable iron 2.25 to 2.75 silicon ..... 1.25 per gross ton above base
Malleable iron 2.75 to 3.00 silicon ..... 3.00 per gross ton above base

Manganese, sulphur and phosphorus variations to be adjusted as formerly customary in each district having respect to the base price.

Where iron is sold by fracture, the usual grading prevailing in each district to continue.

Foundry and bessemer irons are subject to the following differentials for silicon, to be added to the base prices:

FOUNDRY IRON

Silicon	1.75	to	2.25	Base
Silicon	2.25	to	2.75	$1.25
Silicon	2.75	to	3.25	3.00
Silicon	3.25	to	3.75	5.00
Silicon	3.75	to	4.25	6.00
Silicon	4.25	to	4.75	7.00
Silicon	4.75	to	5.25	8.00
Silicon	5.25	to	5.75	9.00
Silicon	5.75	to	6.00	9.00

BESSEMER IRON

Silicon	3.00	to	3.50	$2.00
Silicon	3.50	to	4.00	3.00
Silicon	4.00	to	4.50	4.00
Silicon	4.50	to	5.00	5.00

CHARCOAL IRON

Change the differential for northern semi-cold blast charcoal iron on page 39 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 18), to read $37 per gross ton above base, instead of $22.00 per gross ton above base.

HIGH SILICON OR SILVERY IRON

Change the differentials shown on page 39 (Iron Trade Review booklet, page 18) to read as follows:

6 per cent silicon..$10.00 per gross ton above base
7 per cent silicon.. 11.00 per gross ton above base
8 per cent silicon.. 13.50 per gross ton above base
9 per cent silicon.. 15.50 per gross ton above base
10 per cent silicon.. 18.00 per gross ton above base

BESSEMER FERROSILICON

Change the differentials shown on page 39 (Iron Trade Review booklet page 18) to read as follows:
10 per cent silicon..$23 per gross ton above base
11 per cent silicon— 26.30 per gross ton above base
12 per cent silicon— 29.60 per gross ton above base

Add the following after the prices on Special Car Wheel or Cylinder Iron on page 40 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 20):

Differentials

All differentials on pig iron are to be added to or deducted from the base price of No. 2 foundry pig iron, except the silicon differentials for bessemer iron, which are to be added to the base price of bessemer iron not over 3 per cent silicon.

The f. o. b. Birmingham and Pittsburgh basis for pig iron does not apply to either charcoal or low phosphorous iron. Prices for these irons continue to be f. o. b. furnace as heretofore, no matter where the furnace producing them is located.

Boiler Tubes

LAPWELDED SUPERHEATER TUBES

After the statement on page 72 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 44), reading "above prices are for carload lots f. o. b. Pittsburgh," add "for less than carload lots prices apply f. o. b. maker's mill."

CHARCOAL IRON BOILER TUBES

After the statement on page 72 (Iron Trade Review booklet page 44), reading, "Above prices for carload lots f. o. b. Pittsburgh," add "For less than carload lots prices apply f. o. b. maker's mill."

SEAMLESS STEEL TUBES

On page 73 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 45), add at the end of the article on Standard Commercial Seamless Boiler Tubes, the following:

"For seamless steel staybolt tubing, 75 per cent base discount from mechanical list.

Sheets

Referring to the institute pamphlet of August, 1918, the following changes should be made:

Cancel paragraph on page 76 (Iron Trade Review booklet page 40), reading:

Standard Sizes

"Gages Nos. 12 to 30, inclusive, 24, 26, 28 and 30 inches wide, by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long."

And substitute therefore the following:

Standard Sizes

"Gages Nos. 12 to 30, inclusive, 24, 26, 28 and 30 inches wide, by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28, inclusive, in addition to the above, 36 inches wide by 96 inches and 120 inches long."

On page 77 (Iron Trade Review booklet page 41), under "Blue Annealed Sheets, add after the Extras for Width," the following:

Standard Sizes

Width, 24, 26, 28, 30, 36 and 48 inches
Length, 72, 84, 96, 120 and 144 inches.
See note under extras for boxing and crating.

On page 78 (Iron Trade Review booklet page 41) cancel from paragraph giving standard sizes for Galvanized Sheets, the following:

"Gages Nos. 14 to 28, inclusive, 36 inches wide by 96 inches and 120 inches long."

On page 79 (Iron Trade Review booklet page 42) under Painted and Formed Products between the words "Beaded Ceiling" and "Weatherboard Siding" and the corresponding price, add the following:

"Gages 19 to 28 inclusive, only."

Between the words "Rock face brick (and stone) siding," and the corresponding price, add the words:

"Gages 25 to 28 inclusive, only."

On page 80 (Iron Trade Review booklet page 43) cancel "Patent Leveling 25c per 100 pounds," and substitute therefore the following:

"Patent or Stretcher Leveling (not resquared) 25c per 100 lb.

On Page 80 (Iron Trade Review booklet page 43) under "Extras for Boxing and Crating," cancel paragraph reading:

"Crating extras are based on crates containing 500 to 600 pounds. For any material packed lighter or heavier than 500 to 600 pounds per crate an extra charge will be made."

and substitute therefore the following:

"Crating extras are based on crates containing 500 to 600 pounds. For material crated otherwise, prices will be quoted on application."

On page 80 (Iron Trade Review booklet page 43) under "Miscellaneous" extras, cancel the third item reading:

"Single pickled, and oiled or limed..... .35"

and substitute therefore the following:

"Hot rolled, pickled and annealed, oiled or lime finish ..... .45"

The fifth line should read:

"Full pickled, full cold rolled and **reannealed** .60"

On page 81 (Iron Trade Review booklet page 43) add:

"Extras for special analysis subject to special negotiation."

On page 83 (Iron Trade Review booklet page 44) under Automobile Sheets, cancel prices for oiling, patent leveling and resquaring.

On page 83 of institute pamphlet under Electrical Sheets, the third line should read "trade name" instead of "grade name."

Standard Steel Cut Nails

Change the base price of cut nails shown on page 88 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 60) from $4.00 per 100 pounds to $5.00 per 100 pounds.

Barbed Wire

Cancel everything under the head "Barbed Wire" on page 101 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 48), and substitute therefore the following:

"Base price recommended by the Committee on Steel and Steel Products of the American Iron and Steel Institute, Nov. 13, 1917, May 21, 1918, and Sept. 26, 1918:

Base price on standard two-point and four-point hog and cattle pattern painted barbed wire, packed on reels, 95 to 120 lb., f. o. b. Pittsburgh, Pa., per 100 lb.....$3.65
Add for galvanizing, per 100 pounds..... .70
Add for special weights or packing..... .15
Special designs and patterns at corresponding prices.
Painting, other than standard color and quality, subject to negotiation.

Cold Rolled Strip Steel

On page 113 of the institute pamphlet of August, 1918 (Iron Trade Review booklet, page 59), add at the end of paragraph on quantity differentials the following: "On all orders for less than a carload there will be an additional charge equivalent to five points reduction in discount."

Cancel the paragraph on page 114 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 60), reading as follows:

"All prices for cold rolled strip steel are f. o. b. maker's works, with actual freight allowed to destination when not in excess of 31c per 100 pounds. Where freight rate exceeds 31c per 100 pounds the excess to be paid by buyer."

and substitute therefore the following:

"All prices for cold rolled strip steel are f. o. b. Pittsburgh, Pa."

Change the extra for "boxing or wrapping" on page 115 of the institute pamphlet from 15c per 100 pounds to 50c per 100 lbs.

Chain

After the paragraph covering Railroad Inspection on page 118 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 46), add the following:

EXTRA FOR PACKING

On all chain packed in barrels, kegs, boxes or other containers add $0.25 per 100 pounds.

Cast Iron Water Pipe

Cancel the prices and effective dates for cast iron water pipe shown on page 123 of the institute pamphlet of August, 1918 (Iron Trade Review booklet page 44), and substitute therefore the following:

$60.00 f. o. b. Birmingham, Ala. Effective Oct. 1, 1918.
67.70 f. o. b. New York. Effective Oct. 1, 1918.
66.80 f. o. b. Chicago. Effective Oct. 1, 1918.

Horse and Mule Shoes

Change the base price for horse and mule shoes shown on page 123 of the institute pamphlet of August, 1918, from $5.75 per 100 pounds to $6.25 per 100 pounds.

Warehouse Trade

Prices from stock on iron and steel products, recommended by the committee on steel and steel products of the American Iron and Steel institute, Sept. 26, 1918.

Prices from warehouse stock on following iron and steel products shall not exceed the basis shown in the following table:

TO THE OFFICIAL MAXIMUM CARLOAD MILL PRICES, F. O. B. PITTSBURGH, OF THE MATERIALS SHOWN BELOW, THERE MAY BE ADDED THE MAXIMUM DIFFERENTIALS SHOWN, PLUS CARLOAD RATE OF FREIGHT FROM PITTSBURGH TO WAREHOUSE POINT.

Items	Maximum Warehouse Differential Per 100 Pounds
Bars	$1.00
Structural Shapes	1.00
Plates	1.00
Cold Rolled Shafting, etc.	1.25
Hoops, Bands and Strips	1.00
Black Sheets	1.25
Galvanized Sheets	1.25
Tin Plates	1.25
Blue Annealed Sheets	1.00
Rivets—Boiler	1.00
Rivets—Structural	1.00
Square Twisted Bars	1.00
Floor Plates	1.00
Steel Chain	1.25
Iron Bars	1.00
Track Spikes (Steel)	1.00
Track Bolts	1.00
Boat Spikes	1.00
R. E. Tire, 1½x½ and larger	1.00
R. E. Tire (smaller)	1.00
Light Rail Joints, complete	1.00
Light Rails	1.00
Barbed Wire (Galv.)	1.00
Boiler Tubes, Lap-Welded	1.25
Boiler Tubes, Charcoal Iron	1.25
Boiler Tubes, Seamless	1.25
Cold Rolled Strip Steel	1.25
Cut Nails	.50
Wire Nails	.50
Spring Steel	1.00
Steel Pipe, Black	1.25
Tue Calk Steel	1.00

Prices from warehouse stock on the following shall not exceed the basis shown below.

From the manufacturers standard list prices per 100 pounds, deduct the minimum discounts shown and add the carload rate of freight per 100 pounds from Pittsburgh to warehouse point.

Items	Minimum Discounts Per 100 Pounds
Hot Pressed Nuts, square, blank	$1.25
Hot Pressed Nuts, hexogan, blank	1.05
Hot Pressed Nuts, square, tapped	1.05
Hot Pressed Nuts, hexagon, tapped	.85
c. p. c. and t. square and hexagon nuts, blank	1.00
c. p. c. and t square and hexagon nuts, tapped	.75

Above prices are maximum; usual quantity extras of list are not to be added.

Prices from warehouse stock on bolts and rivets shall not exceed manufacturers standard list prices, less the minimum discounts shown:

Items	Minimum Discount for Eastern District	Minimum Discount for Western District	Minimum Discount for Pacific District
7/16 in.x6 in. smaller and shorter rivets	40%	35%	25-5-5%
Machine Bolts h.p. nuts 3/8x4 in.			
Smaller and shorter rolled threads	40-10	40-2½	35-7½
Cut threads	40	35	25-5-5
Larger and longer sizes	25-5	20-5	10-10
Machine Bolts, c. p. c. and t. nuts 3/8x4 in.			
Smaller and shorter	25-5	20-5	10-10
Larger and longer	20-2½	10-7½	10-2½
Carriage Bolts, 3/8x6 in.			
Smaller and shorter, rolled threads	40	35	25-5-5
Cut threads	35	30	25-2½
Larger and longer sizes	20-5	10-10	15
Lag bolts	40	35	25-5-5
Plow bolts, No. 1, 2, 3	33-⅓	20-10	25
Semi-finished hexagon nuts			
5/8 and larger	50-10	50-2½	45-7½
9/16 and smaller	60	50-10-5	50-5-5
Stove bolts	60-10	60-2½	50-10-5-5
Stove bolts in bulk 2½ per cent extra.			
Tire bolts	40-5	35-5	30-7½

Eastern District: To include all points on or east of the Mississippi river, including Duluth. Points on the west bank would be included in this classification.

Western District: To include points in states west of the Mississippi, except those on the west bank of the river as above mentioned, except the states of California, Oregon, Washington, Idaho, Nevada, Utah and Arizona, Montana, Wyoming, Colorado, New Mexico and the city of El Paso.

Pacific District: To include California, Oregon, Washington, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico and the city of El Paso.

Above prices are maximum; usual quantity extras of bolt list are not to be added.

Prices from warehouse stock on seamless steel

(*Concluded on Page 710*)

THE FOLLOWING TABLE SHOWS MAXIMUM SELLING PRICES FROM WAREHOUSE STOCK AT VARIOUS IMPORTANT POINTS, BASED ON THE RECOMMENDED BASIS OF PRICES. PRICES AT OTHER POINTS TO BE FIGURED IN ACCORDANCE WITH RECOMMENDED BASIS.

	New York City	Chicago	Boston	Philadelphia	Cincinnati	Cleveland	Detroit	Buffalo	St. Louis	San Francisco
Bars	$4.145	$4.17	$4.17	$4.13	$4.13	$4.07	$4.13	$4.07	$4.24	$5.15
Structurals	4.245	4.27	4.27	4.23	4.23	4.17	4.23	4.17	4.34	5.25
Plates	4.495	4.52	4.52	4.48	4.48	4.42	4.48	4.42	4.59	4.50
Cold rolled	+13%	+13%	+13%	+13%	+13%	+11%	+12%	+10%	+15%	+33%
Hoops and bands	4.745	4.77	4.77	4.73	4.73	4.67	4.73	4.67	4.84	5.75
Toe calk steel	4.695	4.72	4.72	4.68	4.68	4.62	4.68	4.62	4.79	5.70
Black Sheets	6.495	6.52	6.52	6.48	6.48	6.42	6.48	6.42	6.59	7.50
Galvanized Sheets	7.745	7.77	7.77	7.73	7.73	7.67	7.73	7.67	7.84	8.75
Blue Annealed Sheets	5.495	5.52	5.52	5.48	5.48	5.42	5.48	5.42	5.59	6.50
Rivets (boiler)	5.745	5.77	5.77	5.73	5.73	5.67	5.73	5.67	5.84	6.75
Rivets (structural)	5.645	5.67	5.67	5.63	5.63	5.57	5.63	5.57	5.74	6.65
Square twisted bars	4.27	4.295	4.295	4.255	4.255	4.195	4.255	4.195	4.365	5.275
Floor plates	6.245	6.27	6.27	6.23	6.23	6.17	6.23	6.17	6.34	7.25
Steel chain	8.745	8.77	8.77	8.73	8.73	8.67	8.73	8.67	8.84	9.75
Iron bars	4.745	4.77	4.77	4.73	4.73	4.67	4.73	4.67	4.84	5.75
Track spikes (steel)	5.145	5.17	5.17	5.13	5.13	5.07	5.13	5.07	5.24	6.15
Track bolts	6.145	6.17	6.17	6.13	6.13	6.07	6.13	6.07	6.24	7.15
Boat spikes	6.495	6.52	6.52	6.48	6.48	6.42	6.48	6.42	6.59	7.50
R. E. tire, 1½x1½ and larger	4.145	4.17	4.17	4.13	4.13	4.07	4.13	4.07	4.24	5.15
R. E. tire (smaller)	4.295	4.32	4.32	4.28	4.28	4.22	4.28	4.22	4.39	5.30
Light rail joints, 8-lb. bar	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.22
Light rail joints, 10-lb. bar	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.27
Light rail joints, 12-lb. bar	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.31	0.35
Light rail joints, 16-lb. bar	0.36	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.37	0.42
Light rail joints, 20-lb. bar	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.39	0.44
Light rail joints, 25-lb. bar	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.47	0.53
Light rail joints, 30-lb. bar	0.57	0.57	0.57	0.57	0.57	0.56	0.57	0.56	0.57	0.66
Light rail joints, 35-lb. bar	0.65	0.65	0.65	0.65	0.65	0.64	0.65	0.64	0.66	0.75
Light rail joints, 30-lb. angle	0.75	0.75	0.75	0.75	0.75	0.74	0.75	0.74	0.76	0.87
Light rail joints, 35-lb. angle	0.83	0.83	0.83	0.83	0.83	0.82	0.83	0.82	0.84	0.97
Light rail joints, 40-lb. angle	1.08	1.09	1.08	1.08	1.08	1.07	1.08	1.07	1.10	1.27
Light rail joints, 45-lb. angle	1.27	1.27	1.27	1.27	1.27	1.24	1.27	1.24	1.28	1.48
Light rails, 8-lb.	4.315	4.33	4.34	4.305	4.265	4.23	4.27	4.25	4.355	5.385
Light rails, 12-lb.	4.27	4.285	4.295	4.26	4.22	4.185	4.225	4.205	4.31	5.34
Light rails, 16 and 20-lb.	4.225	4.24	4.25	4.215	4.175	4.14	4.18	4.16	4.265	5.295
Light rails, 25 to 45-lb.	4.18	4.195	4.205	4.17	4.13	4.095	4.135	4.115	4.22	5.25
Barbed wire (galvanized)	4.595	4.62	4.62	4.58	4.58	4.52	4.58	4.52	4.69	5.60
Wire nails	4.245	4.27	4.27	4.23	4.23	4.17	4.23	4.17	4.35	5.25
Cut nails	4.745	4.77	4.77	4.73	4.73	4.67	4.73	4.67	4.84	5.75
Cold rolled strip	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.78	8.69
Steel pipe basing, sizes ¾-in. to 3-in. buttwelded—black	40%	40%	40%	41%	41%	41%	41%	41%	40%	30%
Merchant Boiler Tubes Lapwelded—Steel										
1-¾ to 2 inches, outside diameter	+ 2%	+ 2%	+ 2%	+ 2%	+ 2%	+ 1%	+ 2%	+ 1%	+ 3%	+12%
2-¼ inches, outside diameter	2%	2%	2%	3%	3%	3%	3%	3%	2%	8%
2-½ inches to 3⅛ inches, outside diameter	9%	9%	9%	9%	9%	10%	9%	10%	8%	10%
3-½ inches to 13 inches, outside diameter	19%	19%	19%	19%	19%	20%	19%	20%	18%	9%
Merchant Boiler Tubes Seamless Steel.										
1 in. and 1-⅛ in., outside diameter	$370.00	$370.00	$370.00	$370.00	$370.00	$368.00	$370.00	$368.00	$372.00	$390.00
1-¼ in. outside diameter	310.00	310.00	310.00	310.00	310.00	308.00	310.00	308.00	312.00	330.00
1-⅜ in., outside diameter	300.00	300.00	300.00	300.00	300.00	298.00	300.00	298.00	302.00	320.00
1-½ in. and 1-¾ in., outside diameter	250.00	250.00	250.00	250.00	250.00	248.00	250.00	248.00	252.00	270.00
2 to 2-½ in., outside diameter	220.00	220.00	220.00	220.00	220.00	218.00	220.00	218.00	222.00	240.00
2-¾ in. to 3-¾ in., outside diameter	210.00	210.00	210.00	210.00	210.00	208.00	210.00	208.00	212.00	230.00
4 in., outside diameter	230.00	230.00	230.00	230.00	230.00	228.00	230.00	228.00	232.00	250.00
4-½ to 5 in., outside diameter	250.00	250.00	250.00	250.00	250.00	248.00	250.00	248.00	252.00	270.00
Merchant Boiler Tubes Charcoal Iron										
1-¾ in., outside diameter	50%	50%	50%	50%	50%	49%	50%	49%	51%	60%
2 and 2-¼ in., outside diameter	38%	38%	38%	37%	37%	37%	37%	37%	39%	48%
2-½ and 2-⅜ in., outside diameter	23%	23%	23%	22%	22%	22%	22%	22%	24%	33%
3 and 3-¼ in., outside diameter	20%	20%	20%	20%	20%	19%	20%	19%	21%	30%
3-½ to 4-½ in., outside diameter	3%	3%	3%	2%	2%	2%	2%	2%	4%	13%
Spring steel Railway Automobile Vehicle	$4.395	$4.42	$4.42	$4.38	$4.38	$4.32	$4.38	$4.32	$4.40	$5.40

Corporation Adopts Eight-Hour Day

Momentous Decision to Operate on Eight-Hour Day Basis Reached by United States Steel Corporation—Means Wage Increase for Employes and Increased Costs for Employers—Meets Government's Implied Wish

NEW YORK, Sept. 25.—As momentous as any previous decision reached by the United States Steel Corp., is its ruling to adopt the basic 8-hour day. As announced by Judge Gary yesterday, this plan goes into effect Oct. 1, and is applicable throughout the corporation's vast organization, including plants, mines, furnaces, etc. Hitherto these have been operated generally upon a 9 to 12-hour basis.

The corporation announces that the open shop policy heretofore in force throughout the works will be continued.

A number of independent manufacturers are considering the problem at conferences today.

Far-reaching in its effects, this decision introduces a new condition in the iron and steel industry. That the independents will follow the corporation's lead is almost a foregone conclusion. It has been said that a universal 8-hour day policy, favored by various governmental agencies would go far toward solving industry's labor problem and all government suggestion has tended that way. Whether the problem has been solved only to introduce other and new problems, remains to be seen.

Overtime Pay

It is understood that the 8-hour day carries with it what is known as time and one-half pay for overtime and double pay for Sundays and holidays.

This decision means three shifts of eight hours each for the country's iron and steel plants, with a consequent increase in the demand for workmen. The question of finding sufficient labor, with the military drafts making such extensive inroads upon the nation's manpower, will have to be answered. In view of the increasing shortage, the problem presents almost unsurmountable difficulties. If sufficient workmen are not readily found, the decision practically amounts to another wage increase for employes both of the steel corporation and of the independents, who adopt the same policy. Without the ability to hire more men, overtime will be necessary, else the steel industry's conviction up to this time that the general adoption of the 8-hour basic workday will curtail production to a disastrous degree will be upheld.

That the present working force will be willing to work overtime for the increased wages is highly probable. For instance, a man whose hourly wage rate now is 45 cents receives $5.40 for a 12-hour day. Under the new ruling he will receive $6.30 for the same work period. Mounting costs are thus foreshadowed for the entire range of iron and steel products. These are certain to have a reflex action upon prices.

Keeping Men at Work

At this time another factor enters the consideration. Already a tendency is noted among many workmen in iron and steel plants to observe gasless Sundays by working all that day and laying off on a weekday to drive their automobiles. In New England, this practice is said to have lowered production at some plants by 15 per cent. Unless some plan is inaugurated to make this impossible, an additional hardship will be worked upon the employer. As a basis from which to figure, a man who now works 12 hours a day at 45 cents an hour for six days and lays off Sunday, receives $32.40. With double time as an incentive to work Sundays, under the new regime he would receive, laying off one weekday, $44.10 for working the same number of hours in one week, an increase of $11.70, or more than 36 per cent.

The general committee of the American Iron and Steel institute has been making a study of the labor problem as it concerned the steel industry. Into this committee's hands, this 8-hour day question with all other labor matters, was committed at the meeting of steel manufacturers called at the instance of Judge Gary and held at New York on Aug. 28, 1918. It was the sense of that meeting, that the general committee of the American Iron and Steel institute should have full power to act upon the entire labor question, which involved co-operation with the war labor policies board.

The Wheeling Decision

Fresh in mind is the award made by Supreme Court Justice Walter Clark of North Carolina in the case of the Wheeling Mold & Foundry Co., Wheeling, W. Va., abstracts from which are given on page 735 of this issue. By this award, which is upheld by the national war labor board, the employes are directed to work in 8-hour shifts. They will receive time and one-half pay for any overtime on week days and double pay for Sundays and holidays.

Many governmental agencies have taken the position that better work would be done under the 8-hour day plan, as the workmen would be better off physically and consequently no loss in production would follow. The United States Steel Corp. by its new decision discloses its willingness to test out this theory to the fullest degree.

Midvale Employes Meet Company Officers

New York, Sept. 25. (By wire.)—Committees of employes of the Midvale Steel & Ordnance Co., and its subsidiary, the Cambria Steel Co., are meeting officials of the companies at Philadelphia today. The meeting follows the posting of a notice in the various shops on Monday, signed by President A. C. Dinkey and reading as follows:

"We recognize the right of wage earners to bargain collectively with their employers and we hereby invite all employes to meet with officers of their respective companies for the purpose of considering and if practicable adopting a plan of representation by the employed which shall be thoroughly democratic and entirely free from interference by the companies or any official or agent thereof. It is hoped that every employe will respond to this invitation and meet with the officers of the company in the spirit of fair dealing and mutual helpfullness."

M. H. Dinshaw & Co., Bombay, India, machinery importers and commission agents, are desirous of representing American manufacturers of all kinds of machinery and equipment, including steam engines and boilers, woodworking machinery, metal working machinery, pumps, machine tools, etc.

New Price Statements

(*Concluded from Page 708*)

mechanical tubing shall not exceed manufacturer's standard list prices, less the minimum discounts shown:

Items	Minimum Discount Per cent
Seamless Steel Mechanical Tubing—Round ½-inch to 5½-inch O. D. .10 to .20 Carbon	68

Except as follows:

½ to 1⅝-in. O. D. 18 B. W. G.	50
½ to 1⅝-in. O. D. 20 B. W. G.	35

To arrive at net discounts, all base discounts are reduced by the number of points shown in table for each size or gauge.

War tax on freight must not be added to freight cost from mill to warehouse. This tax must be absorbed by warehouseman in his differential.

All material sold from warehouse must be sold on the same list of extras and differentials that govern sales of these products from mill, excepting quantity differentials. The sale of small quantities of iron and steel products is an inherent part of warehouse trade and has been considered in fixing the differentials shown.

A warehouseman or jobber purchasing materials from another warehouseman or jobber, for resale, may not add any commission or brokerage which would cause the party to whom he resells to pay a price higher than the above maximum prices. In such cases it is recommended that the selling warehouseman or jobber make a reasonable reduction in price, so that the purchasing warehouseman or jobber may, at least, resell without loss, at not to exceed the maximum prices.

Except as recommended above and as modified by the announcement of Sept. 12, 1918, all maximum prices, differentials, and extras as shown in the institute pamphlet of August, 1918 (IRON TRADE REVIEW booklet and supplement of Aug. 1), continue in effect for the three months ending Dec. 31, 1918, subject to the usual conditions, as stated in the President's announcement, regarding contracts made for delivery in whole or in part after Dec. 31, 1918.

Ferroalloys

The committee, on recommendation of the subcommittee on ferroalloys, calls the attention of all users of domestic chrome ore for refractory purposes to the desirability of covering their current market requirements before the close of the domestic shipping season which, depending on weather conditions, will probably end in November next.

Some question has arisen among consumers of chrome ore for refractory purposes, as to the proper procedure in cases where chrome ore, purchased with the expectation that it will not exceed 43 per cent in chromic oxide, upon receipt and analysis is found to contain more than 43 per cent in chromic oxide. In such cases, where it is desired to retain and use such ore, if full data is submitted to the subcommittee on ferroalloys through its secretary, A. A. Fowler, 30 Church street, New York City, permission will be given to receive and use such chromic ore, unless in the judgment of the subcommittee on ferroalloys there are valid reasons to the contrary.

Iron and Steel Scrap

On recommendation of the subcommittee on scrap iron and steel the committee makes the following announcement:

War Tax on Freight

The revenue bill approved Oct. 3, 1917, imposing a war tax on freight, states that such tax shall be paid by the "person, corporation, partnership or association paying for the services or facilities rendered".

In cases where the prices on products of iron or steel contemplate delivery to buyer's works, the war tax to receive and use such chrome ore, on the freight is payable by the seller. The buyer may, at his option, agree to pay the war tax on the freight, but may not do so if such payment makes the price which he pays for the material exceed the maximum price.

Sellers of scrap iron and steel must deduct the freight, plus the war tax, in determining the maximum price f.o.b. shipping point.

Abandon Steel Project

Birmingham, Ala., Sept. 24.—Because it would take two years in which to erect such a plant and because the marine engine and equipment building capacity for ships in this country is not in proportions to ship steel production, the plans for the Woodward Iron Co. to erect a steel works in the Birmingham district with government backing has been practically abandoned. When the proposition was first broached it was undertaken seriously and plans and estimates were worked up. The Woodward company has almost inexhaustible supplies of coal and ore, five furnaces and suitable sites for a steel plant.

The Non-Ferrous Metals

Copper Lead Spelter Tin

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
Sept. 18	26.00	.....	8.05	9.50	33.00	13.87½
Sept. 19	26.00	.....	8.05	9.50	33.00	13.87½
Sept. 20	26.00	.....	8.05	9.25	33.00	13.87½
Sept. 23	26.00	.....	8.05	9.25	33.00	14.00
Sept. 24	26.00	.....	8.05	9.20	33.00	14.00

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 27.30c.

†No spot Straits tin offering.

‡Price agreed to by leading interest and independents.

§Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, Sept. 24.—Tin has occupied the center of the stage in the metal markets in recent weeks. This metal has been placed under international control and to all appearances the tin merchants will be put completely out of business. All purchases in the Straits will be made through E. Boustead & Co., London. Allocation for consumption will be made through the tin control, sitting in London. Distribution in the United States will be through the American Iron and Steel Institute. It is further understood the United States Steel Corp. will assume the financial obligations incurred through this arrangement. While the war industries board at Washington has stated that the tin supply of the world will be controlled by the interallied authorities, details still are lacking as to how the buying in Hongkong and Batavia is to be managed, and how the Bolivian and miscellaneous business is to be conducted. Since Sept. 13 no Singapore quotations have been cabled, probably because of the new regulation. The New York tin market has been extremely sluggish, owing to reluctance of consumers to buy pending the outcome of the negotiations. Some Banca tin for spot delivery can be bought by consumers at around 84c, but lately the price advanced and some quotations are 85c. At the same time, consumers with government contracts can buy Straits tin for prompt shipment at around 74.50c, c. i. f. New York.

The lead industry is entirely under the control of the lead producers' committee. This committee is scrutinizing orders for consumption carefully and is excluding all uses deemed nonessential. The agreed prices are unchanged at 8.05c, New York, and 7.75c, St. Louis, with an increase to dealers of ½c for lots of one ton upward but less than carloads, and an increase of ¾c to dealers for less than ton lots.

Spelter buying was active last week, but relapsed into dullness this week. The government has had some fairly large inquiries for grade C, while foreign demand has been good. Europe also is trying to buy manufactured brass here, but we seem unable to meet this call to any extent, owing to insufficient labor at the brass mills. In the absence of inquiry this week the market is easier and prime western can be bought around 9.35c, St. Louis, for prompt shipment, while November-December shipment can be bought around 9.05c to 9.10c.

The copper market has reflected no new developments. Mine production shows a tendency to diminish, though good recovery by three or four companies in August offset the general falling off.

The aluminum price is fixed at 33c, at which price government contractors may fill their requirements.

Demand for antimony was larger than usual last week and prices stiffened up somewhat. Stocks are reported steadily decreasing, but some unsold stocks still exist. Futures are held at prices relatively higher than spot. Spot Chinese and Japanese brands are quoted 13.75c to 13.87½c, duty paid, New York.

How Propeller Castings Are Made

Present-Day Requirements Stimulate an Unusual Demand for Marine Castings—A Simple and Efficient Method of Casting Propellers is Described—Unusual Specifications Are Often Involved

BY R. H. PALMER

AMONG foundrymen generally unusual interest is being manifested in the production of castings for ships. The tremendous shipbuilding program outlined by the government is unparalleled by any similar undertaking. Regardless of whether these vessels are built of wood or steel, they will require thousands of tons of steel, gray iron, brass and bronze castings and the services of many casting manufacturers will have to be enlisted to whom this class of work marks a venture into an unknown field.

Owing to its unusual contour, the welding and casting of the propeller, whether by single blade or integral, seemingly presents the greatest difficulties. Naval architects, also, are inclined to vary the pitch of propellers to meet unusual conditions and the pitches are almost as numerous and varied as the sizes and weights of these castings. The responsibility of matching theory with fact devolves upon the foundryman, and he frequently is called upon to meet weird specifications. Those foundrymen who have specialized in propeller work have designed many novel methods to expedite production and the system to be described is simple and reduces to the minimum the necssary flask equipment. The method of

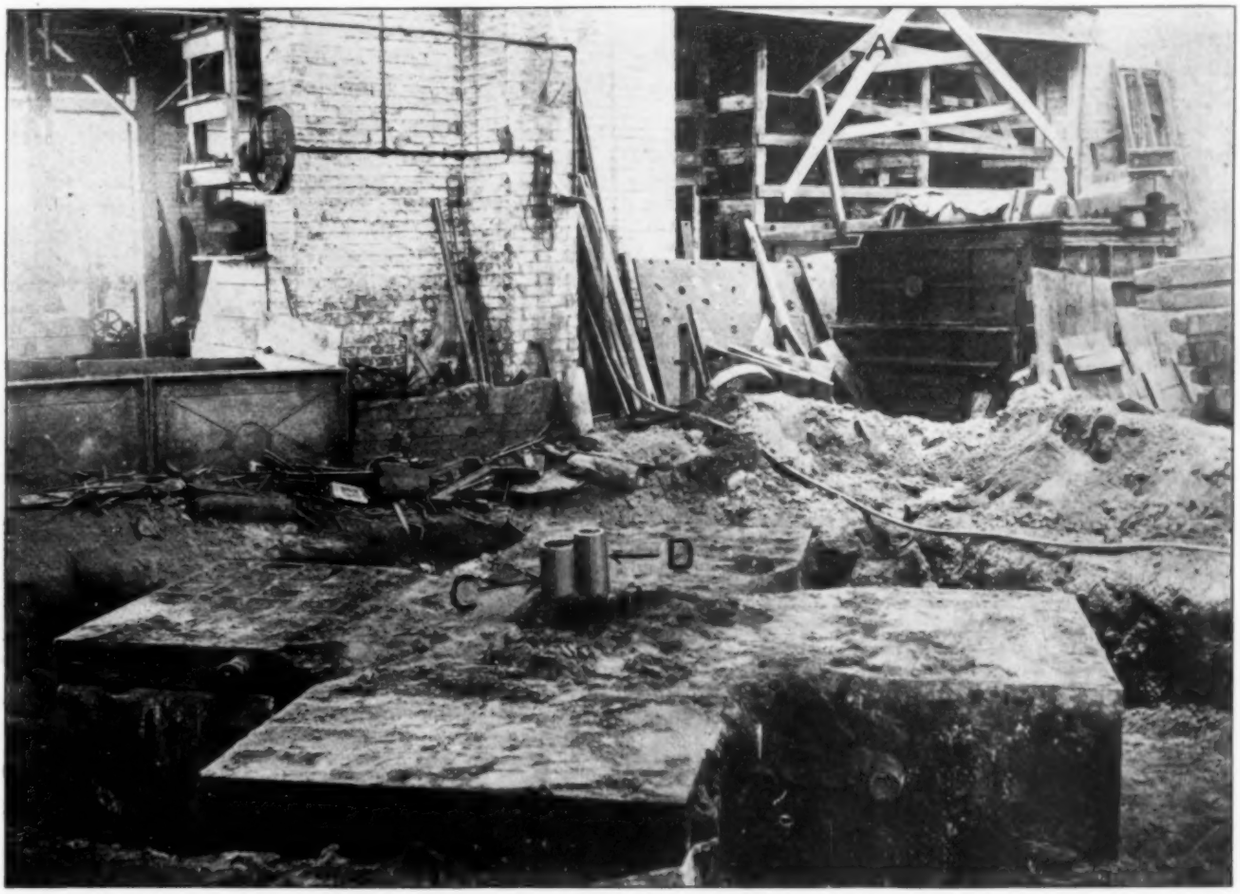


FIG. 1—A 12,000-POUND PROPELLER FOR A PASSENGER LINER WITH A MOTOR BOAT WHEEL IN ITS BORE. FIG. 2—PROPELLER MOLD AFTER REMOVING WEIGHTS AND CLAMPS AND JUST BEFORE SHAKING-OUT. THE RISER IS SHOWN AT *C* AND *D* IS A PIPE PLACED OVER THE VENT IN THE CORE

molding the hub also is novel and effects economies in labor costs.

A propeller mold with the weights removed, just before shaking-out, is shown in Fig. 2 and in Fig. 3 the cope halves of two of the blades have been removed and the gates and riser also are shown. Four flasks are used, one for each blade, which are so ingeniously joined together by the hub to make practically one flask, as illustrated in the top plan of the mold, Fig. 6.

When making the mold a core is used to form the bottom of the hub, which contains a print for the center core and a hole in its center through which the spindle is passed to its seat underneath the core. The four drag flasks then are centered around the spindle to form a cross, as shown in Figs. 2 and 3. Coke or cinder is rammed into the deep side of each flask

FIG. 4—PATTERNS FOR A WIDE ASSORTMENT OF PROPELLERS THAT CAN BE MOLDED IN ONE SET OF FLASKS

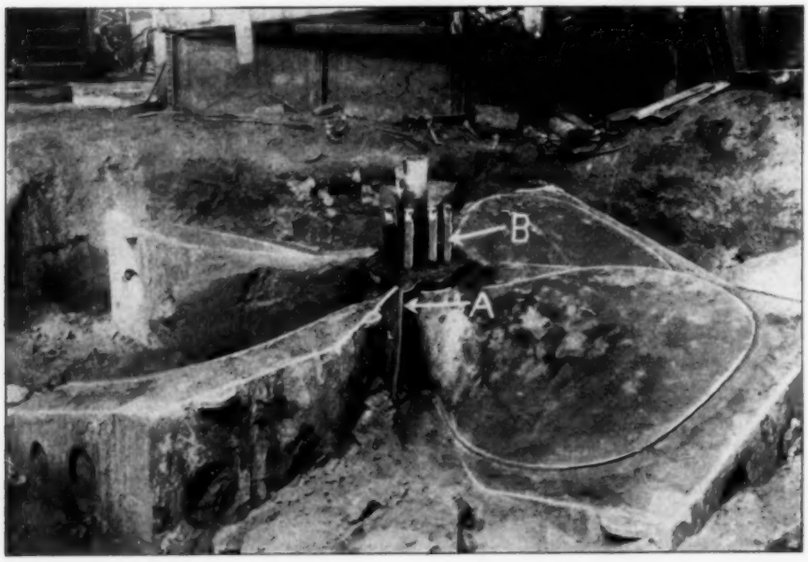


FIG. 3—PROPELLER PARTLY UNCOVERED SHOWING THE GATES AT *B*

to the line *A*, Fig. 8, and sand is rammed on top of this to a point about 4 inches below the line where the blade pattern will rest. The wood core print then is lowered over the spindle into the print in the bottom core and the pattern is lowered onto the spindle. A collar, provided with a set screw, holds the hub in place on the spindle. The blade of the pattern is supported by wood cross-pieces which are clamped to ears on the sides of the flasks. Sand next is rammed underneath the pattern blade and a joint is made conforming to the lines of the pattern. The cope half of the flask then is lowered over the pattern and the ramming of the propeller blade is completed.

Since this flask equipment is used on a wide range of sizes of propellers having varied pitches and hubs, it is necessary to resort to numerous expedients to adapt the cope flasks to these patterns. In Fig. 4 is shown an assortment of propeller patterns all of which can be molded by this flask equipment. The pattern, *A*, in the foreground, is for a propeller 11 feet 4 inches in diameter, which weighs 7500 pounds. A wheel cast from this pattern is shown on the boring machine, Fig. 5. Other patterns in Fig. 4 are for wheels from 8 to 14 feet in diameter, the latter weighing 14,000 pounds. A propeller for the steamer NEW HAMPSHIRE, one of the Long Island sound boats of the New England Steamship Co., is illustrated in Fig. 1, and in the bore of this propeller is a small wheel for a launch, also molded and cast in this foundry.

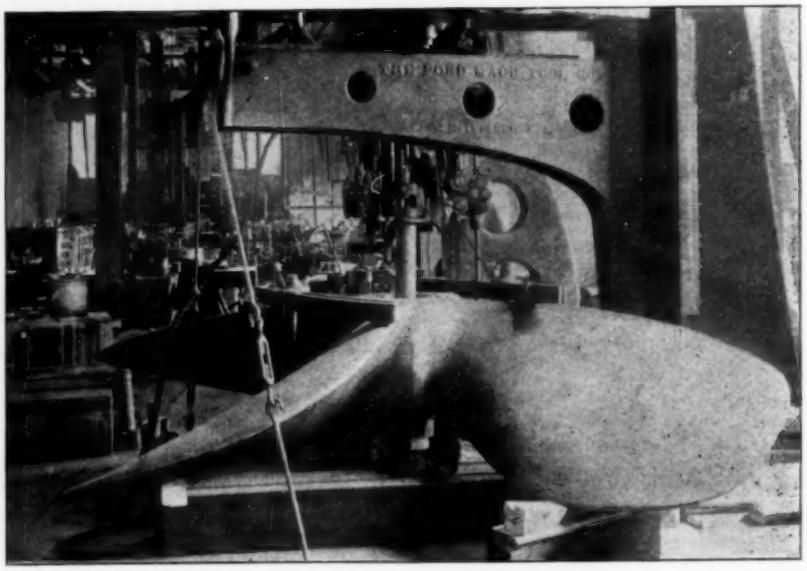


FIG. 5—BORING A LARGE PROPELLER

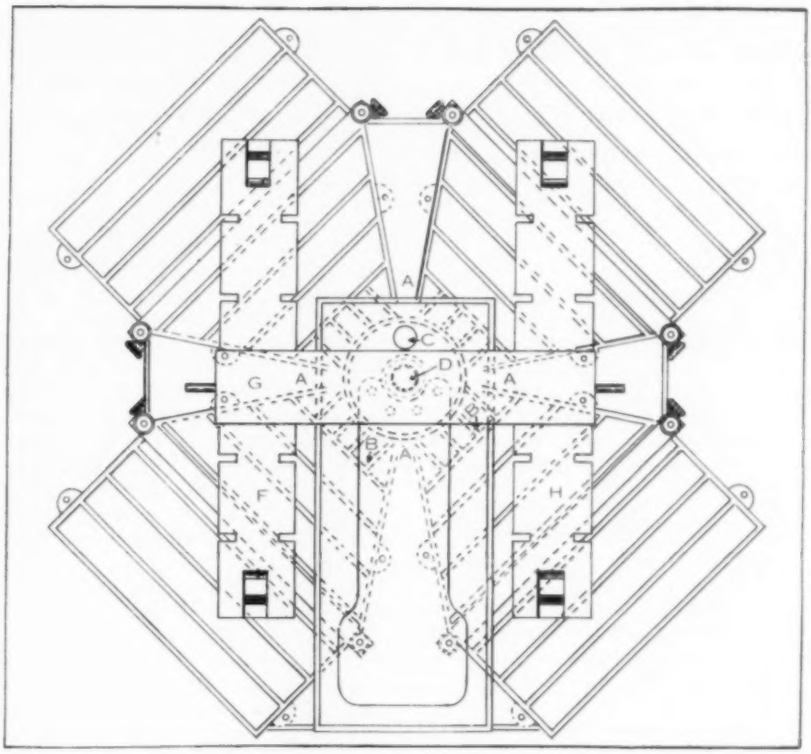


FIG. 6—TOP OF A PROPELLER MOLD SHOWING GATES, RISER AND WEIGHTS

Owing to the differences in the pitch of the blades of the different patterns, the bars of the copes in many cases are as far distant from the pattern as 8 inches, and to support the hanging sand, loose chucks, *B*, Fig. 6, are hung onto the bars, in addition to rods which are bent to shape especially for this purpose. Chucks forming the points of the flasks next to the hubs are bolted in position. After the cope flask has been properly prepared for the pattern, it is rammed and lifted off.

The hubs of some wheels are of such a form that the pattern can be raised on the spindle and swung around to the next drag. However, some hubs are of such a design that it is necessary to lift out the spindle when drawing the pattern.

To assure the accurate centering of the pattern in the flask for the next blade to be molded, a large wood square, in the form of a cross is employed. This device is shown at *A*, Fig. 2. Through a hole in its center it is lowered over the spindle to accurately locate the blade

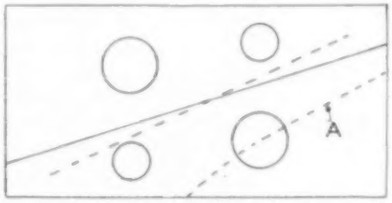


FIG. 8—HEIGHT OF CINDERS AND LOCATION OF PATTERN IN FLASK

pattern in the adjoining flask. Before the pattern is drawn from the mold just made, the parting of the drag is marked to coincide with a mark on the pattern and these lines, with the aid of the squaring device, make it possible to locate the pattern accurately in the adjoining flask. The foregoing operations are repeated for each of the blades, which are molded independently of each other. The molds then are finished, coated with blacking and dried. The copes are dried in an oven, while the drags are dried in the position in which they are molded.

After drying, the copes are replaced, but it will be noted that the four-blade molds do not form a perfect hub at the four points, *A*, Fig. 6. After the copes have been bolted to the drags, false pieces are inserted at the points, *A*, Fig. 6, to complete the hub. Sand is rammed against these false pieces to complete the hub section of the mold, after which it is coated with blacking and dried with fire baskets.

The center core, *A*, Fig. 7, then is set in place. The part of this core, shown at *B*, forms the top of the hub of the casting. This hub core is beveled on the edge, and in molding this print in the copes, the sides are sloped to conform to the level on this bead on the center core. After the center core is set, waste is tucked into the openings around the head of the center core and gate sticks are placed in the gate hole in the core. To form a riser, a piece of pipe is placed at *D*, Fig. 6. Sand then is rammed over the core. The mold then is bolted and weighted down, as shown at *F*, *G* and *H*, Fig. 7. The gate sticks then are withdrawn, the runner is built and the mold is ready for pouring. To hold down the center core, wedges *E*, Fig. 7, are driven between the weight *G* and the section of pipe to hold down the center core *A*.

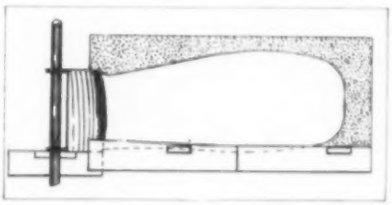


FIG. 9—HOW THE PATTERN IS SUPPORTED ON A SPINDLE WHILE IT IS BEING MOLDED IN THE DRAG

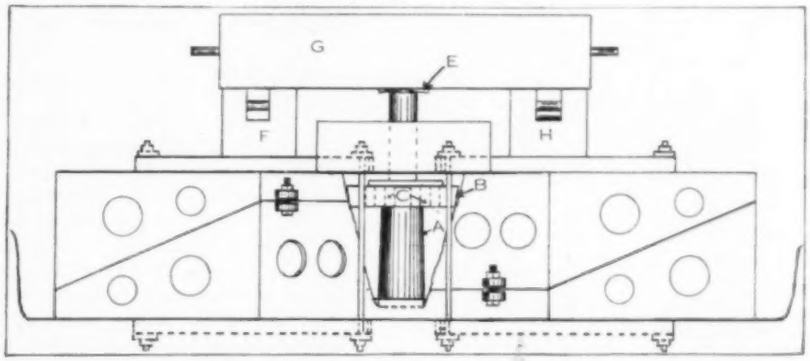


FIG. 7—PART SECTION OF PROPELLER MOLD, SHOWING HUB CORE IN POSITION

A flare was perfected recently which has a brilliancy equal to 400,000 candlepower. It is chiefly for the use of aviators, and it is said that an airman, while flying at night thousands of feet in the air, can easily detect a target with the aid of the light. The flare is equipped with intricate mechanism. When released from an airplane the action of the air sets the fuse afire. The amount of light given is equal to a battery of from 150 to 175 street arc lights, or from 15,000 to 17,500 common incandescent lights.

Compensation Laws Are Vindicated

Investigation by Government Representative in Three States Demonstrates Advantages of Workmen's Compensation System Over Liability Laws—Old System is Both Uncertain and Expensive

THE shyster lawyer who makes his living by ambulance chasing will always tell you that workmen's compensation laws are a failure. He contends that the amount allotted to the workman or his family through this medium is not at all proportionate to the amount he can pry out of the employer under the employers' liability laws. His interest in the matter is quite understandable. Undoubtedly, however, there are reputable lawyers who sincerely believe that the old methods of securing recompense for injured workmen and their families are best.

In order to determine the relative merits of the two systems, the department of labor authorized M. K. Conyngton to investigate and report on actual conditions. To make the returns as complete as possible three states were chosen for investigation; Connecticut, which in 1914 installed an elective system by which either the workmen's compensation or the employers' liability law may be employed at the option of employers and workers; Ohio, in which since 1913 a compulsory workmen's compensation law has been in force; and Pennsylvania where the employers' liability law still reigns supreme. The results of the investigation follow in summarized form.

Factors Are Many

Connecticut and Ohio were found to offer an excellent field for such an inquiry, both being industrial states with diversified manufactures. The chief difference between the compensation laws of the two states lies of course in the fact that it is optional in one state and compulsory in the other. According to the compensation law of Connecticut neither employers nor employes are obliged to come under its provisions if they prefer to remain under those of the employers' liability law. If, however, the employer does not elect the compensation law he is deprived, in any suit for damages brought against him by an employe, of the common law defenses of assumption of risk, fellow servant, and contributory negligence. If the employe elects not to come under the law, then in any suit he may bring against his employer, the latter is entitled to the common law defenses. In neither state is the employer forced to insure his risks in the state fund. If, however, he elects to insure himself elsewhere he must first secure the permission of the state commission.

The workman is entitled to compensation in case of injury and in case of his death his dependents can collect sums amounting in Connecticut to 50 per cent of the average weekly earnings of the deceased for the year preceding his death, continued for six years. The amount thus awarded, however, must not be less than $5 nor more than $10 a week. In Ohio the dependents of the deceased may receive as compensation two-thirds of his average wages, to be paid weekly for a period of six years, or for such part of this period as the commission may decide. The weekly payments may not be less than $5 nor more than $12. Sums to cover funeral expenses and the cost of medical attention are allowed in both states. The Ohio system permits the commissioners, if they think fit, to set aside the weekly payment arrangement and give immediate aid to the dependents of the injured man by allowing them a lump sum of money. This makes for a flexibility of administration which is largely responsible for the effectiveness of the Ohio system.

In Pennsylvania all employers must report to the department of labor and industry all accidents to their employes which involve a disability of more than two days. The state's responsibility and interest ends there, however. The injured employe has three possibilities ahead of him. The employer may voluntarily or under threat of legal action make a settlement; he may refuse to make a settlement and the employe or his dependents may bring suit; or he may refuse to take any action and the employe or his dependents be in such a position that they feel unable to bring suit and, therefore, simply submit to circumstances. There is, therefore, an element of uncertainty which is not met with in the compensation states. There is one exception to this statement. In a compensation state which permits the employer to take out his insurance in other than the state fund, it sometimes happens that when an accident occurs it develops that the employer had not provided himself with insurance. Under those circumstances he generally refuses to pay the award. The states having compensation laws are making strenuous efforts to enforce payments under those conditions but are not always successful. The uncertainty connected with this is as great as any met with in a state where the employer is not presumably bound to insure the employe.

Why Children Leave School

The investigation resulted in the establishment of certain facts. For instance, it was found in Connecticut and Ohio that taking children out of school and putting them to work, and moving into cheaper quarters, is so seldom resorted to as a means of meeting the loss of income resulting from an accident that such events have little or no significance. In many cases where children are put to work it is not as the result of the accident, but because they have arrived at an age when their families consider that they have had enough schooling. Although in Pennsylvania more cases of taking children from school were directly traceable to loss of income, even here that method seems to be used as a last resort and is, therefore, comparatively infrequent.

There is one large difference in conditions in the two compensation states and the one liability state. In all three the chief method of replacing the lost wage earner is for the widow to go to

Problem is Timely

THE department of labor recently conducted an important investigation to ascertain the relative advantages of workmen's compensation laws as contrasted with employers' liability laws. This is a vital matter which affects both employer and employe. Therefore the results of the investigation should prove of widespread interest. The accompanying article contains a resume of the report turned in to the department by the investigator, M. K. Conyngton, who found the workmen's compensation laws much more effective as a means of caring for the dependents of injured workmen. This is a problem in which employers are deeply interested on the financial as well as the human side, and a careful study of the considerations set forth in this article will therefore be found well worth while than employers' liability laws.

work. However, in Ohio and Connecticut she merely has to supplement a decreased income by her labors, while in Pennsylvania she frequently has to replace it in its entirety. The following table then cannot be accepted unreservedly:

	Conn.	Ohio	Pa.
No. of families considered....	53	206	137
Percentage of widows taking up gainful occupations....	18.9	28.2	31.4

There are several considerations which make the difference in percentage between Ohio and Pennsylvania much larger than the statistics would indicate. One is that a considerably larger proportion of the Ohio widows have no young children; practically two-fifths of those who took up work after the fatality had no children under 14, while in Pennsylvania less than one-fifth (18.6 per cent) were thus free to become wage earners without danger of neglecting young children. Another is found in the type of work which the women take up; to a much larger extent than in Pennsylvania, the widows in Ohio confine themselves to taking roomers or boarders as their means of money making. In many of these cases the widow secures a partial commutation of her award, uses the money to buy a house or to alter for rooming purposes one that she already possessed, and thriftily builds up a business by which to support herself when the compensation payments cease. Nothing of this kind was met with by the government investigator in Pennsylvania where the widow's work seems always a means of meeting an immediate necessity, not an investment for the future.

Another test of significance is the extent to which charitable aid to the families of the decedents has been found necessary. In Connecticut, out of 53 families investigated 1.9 per cent had been forced to ask aid, in Ohio 1.5 per cent out of 206 families had received charity and in Pennsylvania 23.4 per cent out of 137 families had been forced to this extremity.

Data on Compensation

The best test of all, however, in the last analysis is found in the actual figures showing how many families receive compensation and the amounts received. The accompanying table, therefore, appears to be the best demonstration of the superiority of the workmen's compensation law over the employers' liability law from the standpoint of getting results. This table shows the total amount paid to families of married decedents as compensation or settlement and the average amount per family, by size of family, in Connecticut, Ohio and Pennsylvania.

The difference is apparent both in the proportion receiving compensation and the amounts received. The cases in the compensation states in which the awards are contested and the claimants have not received any part of it are on much the same footing as the cases under the liability law in which no damages have been paid. In both cases the claimants may receive something, but what amount is uncertain. In Connecticut 9.4 per cent, in Ohio 2.9 per cent, and in Pennsylvania 57.7 per cent of the families of married men studied came under this heading. In other words, in the compensation states from 90 to 97 per cent had, at the time of the investigation, received compensation; in the liability state only 42 per cent had received payments.

Compensation Varies

The amounts received show an even greater difference. Three families in Pennsylvania were given pensions for an indefinite length of time, one "until the children grew up." As the widow was unable to ascertain what "grown-up" signified in the employer's vocabulary, she felt that the duration of the pension was very uncertain. Aside from these three cases, however, the average amount paid to the families who received anything at all in Pennsylvania was less than one-third the average compensation received in Connecticut and less than one-fourth of that received in Ohio. Turning from the general average to the distribution, the contrast is even greater. The one widow with seven children under 14 received nothing at all in Pennsylvania, while in Connecticut one with the same number in the family received $2344, and in Ohio two widows each with seven children received $3432 apiece. In Pennsylvania half the widows with six children under 14 received nothing at all and the other half an average of $762 apiece. In Connecticut there were no widows in this group, but in Ohio two received $3744 each.

Compensation is Certain

The situation may be summed up by saying that in the compensation states the families of victims of industrial fatalities know with reasonable certainty what to expect; they receive it with reasonable promptness and find it, in general, sufficient to keep them from extreme hardship. For the most part the bereaved appear to share the attitude of the Ohio widow who, after explaining her troubles, said that she never stayed downhearted long because her sister cheered her up by saying: "But just look how much better off you are than if he'd 'a died natural."

In the liability state, the families of decedents are entirely uncertain as to what they will have or when they will get it, except in cases where employers have their own systems of compensation. This statement is not quite correct; a large proportion of claimants are quite certain that they are not going to get anything and that there is no use to try to do so. In most cases in Pennsylvania whether a victim's family receives anything depends much more upon the employer than upon the family's need, the employe's earning capacity or the nature of the accident. In general the payments received are said to be quite inadequate to the needs of the families. Not far from one-fourth of those visited had, already, within less than a year from the fatality, been obliged to seek charitable aid, and there was every prospect that many more would do so before long.

It is not claimed that either of the compensation systems studied is beyond criticism, but their results seem to be superior to those of the liability system.

Compensation in Three States

Total Amount Paid to Families of Married Decedents, as Compensation or Settlement and Average Amount Per Family, By Size of Family, in Connecticut, Ohio, and Pennsylvania.

Children in family under 14 years of age	Compensation paid in Connecticut: Families receiving compensation	Total amount	Average amount	Compensation paid in Ohio: Families receiving compensation	Total amount	Average amount	Pennsylvania: Number of families of specified size	Number receiving payments	Total amount paid[1]	Average per family receiving payments[2]	Average for all families of specified size[2]
Seven	1	$2,334	$2,334	2	$6,864	$3,432	1	..	....	...	...
Six	.	....	....	2	7,488	3,744	10	5	$3,810	$762	$381
Five	3	6,960	2,320	10	26,164	2,616	5	2	400	200	80
Four	3	4,154	1,718	14	42,802	3,057	22	[3]6	1,595	266	73
Three	4	9,821	2,453	17	58,243	3,426	14	2	280	140	20
Two	9	19,379	2,153	28	84,193	3,007	31	14	8,355	597	270
One	8	19,852	2,482	43	135,924	3,161	28	[4]10	6,235	624	223
None	20	45,431	2,271	84	257,889	3,070	26	16	14,314	895	551
Total	48	108,931	2,269	200	619,567	3,098	137	[3]55	34,989	636	261

[1]Not including hospital and funeral expenses.
[2]Not including 3 families receiving a monthly allowance for an unstated period.
[3]Not including 2 families receiving a monthly allowance for an unstated period.
[4]Not including 1 family receiving a monthly allowance for an unstated period.

Safety Rules Reduce Plant Hazards

Injuries Are Averted and Often Lives Are Saved by the Close Observation of Safety First Rules—Workmen Who Fail to Think Are Generally Injured

BY C. H. BALTZELL

THE subject of plant railroad hazards is a big one and brings to my mind the necessity for teamwork and co-operation between industrial plants and railroad employes. In order to secure the best results, we all know that teamwork and co-operation with sincere, honest intentions, secure the best results. We learn by handling safety work in a sincere manner that interest is kept alive. Many men in the beginning of their safety work are disappointed, not being thoroughly in sympathy with it, but rapidly change and become teachers instead of pupils. It is true that in many cases we have been discouraged by the lack of satisfactory response from some employe, but by being patient and tolerant, never overlooking an opportunity to encourage the man, and to constantly instill safety rules and principles into him, he soon becomes one of our strongest and most helpful workers.

Must Exercise Care

Possibilities of personal injury to the employes of manufacturing plants situated on main line railroad tracks, in my estimation, causes an unusual hazard, unless precautions are taken. Wherever it is possible employes should not be permitted to cross and use train yards and tracks as public thoroughfares. A certain amount of exposure of this kind is unavoidable, but accidents that occur in connection with necessary work may be reduced by careful supervision and by the enforcement of a few clear cut rules.

Many accidents that are entirely avoidable occur as the result of thoughtlessness or carelessness. One of the most prolific causes of personal injury is due to the fact that employes get so accustomed to dangerous conditions and surroundings that they do not realize their own personal danger. This reverts to our safety first slogan, "A Careful Man is the Best Safety Device Known."

"Self-preservation is the first law of nature." I believe this is really the foundation of all safety work. A man who thinks safety, is careful to observe safe practices and customs and takes steps to rectify or improve unsafe conditions. He rapidly grows into a dependable safety first man. In investigating personal injury cases, frequently the answer given is "I didn't think." Workmen in order to save a little time or inconvenience, invite disaster by walking on the main track of a railroad with their minds occupied with some subject other than that of their safety, or crawl under or over cars which are standing on a siding, etc., when there is no reason for inviting the hazards which these practices involve.

Presence of mind is an asset to every one, but unfortunately it is sadly lacking in many of us. It is always the unexpected that happens; right at the particular time when presence of mind is so necessary, as a general rule it is lacking. We frequently hear of the hysterical woman—in my opinion there are as many hysterical men. Safety workers should remember that presence of mind is one of the things that it is useful to cultivate. I believe in safety meetings and talks, with the view of causing men to constantly keep before them the necessity of presence of mind under all conditions. Jumping on and off cars, riding on passenger train steps, or hanging onto the sides of freight cars in order to save a few steps, are exceedingly bad practices. It is only a question of time when practices of this kind are going to result seriously for the one who indulges in them.

Set Bad Example

A number of plants are employing boys and young men, and for older men to set a bad example for them is wrong. I have made a practice of holding safety meetings at different industrial plants on my division, and at them talk to the men personally warning them of the danger and the unnecessary risks they often take and the bad examples they are setting for others. At the same time I ask for suggestions and invite their criticisms of any unsafe conditions or practices that have come under their observation. In general safety meetings, it is a good idea to give employes special invitations to attend and give them full opportunity to talk and state their viewpoints. It is astonishing to see the number of men so indifferent to their personal safety, who persist in carrying out unsafe practices, even when properly warned and counseled. I have observed workmen sitting on railroad tracks under a car, merely to keep out of the sun. Cases could be cited where they have lain down on the roadbed to take a nap, apparently indifferent or unconscious of their great danger.

I believe the owner, manager and foreman of every industrial plant should be informed in regard to the value of safety work and efforts should be made to secure their interest and make them realize the dangers surrounding their men. A great many accidents will be avoided in this manner.

Eliminate Unsafe Conditions

Careful inspection should be made by division officers of all conditions surrounding industries and necessary steps should be taken to make safe any condition that is not right. If it is impracticable to make such changes then we should specialize and co-operate with industrial people in order to avoid personal injury at that point. Cleanliness and order is one of the strong features in safety work. There should be no obstructions lying about whereby men might trip, fall and get hurt. Frogs and switches should receive proper attention and all other spaces around railroad tracks that might catch the feet of employes should be filled with metal or wooden blocking. Wooden walks and hand railings should be maintained so as to make safe locations not already protected. Danger signs should be installed in conspicuous places.

There is another thought that comes to my mind and that is the dangerous custom and practice of some industrial workmen when moving cars or attempting to do their own switching by team or hand power. Frequently they leave cars fouling other tracks or throw switches and leave them in

(Concluded on Page 725)

This is abstracted from a paper presented at the St. Louis meeting of the National Safety Council, Sept. 16-21. The author, C. H. Baltzell, is superintendent of the St. Louis & San Francisco railroad, Fort Smith, Ark

Fourth Liberty Loan—Get Ready!

Iron and Steel Industry Preparing to Exceed Former Splendid Records—Varied Methods Employed Previously May Be Amplified for Use in Present Drive—Number of Subscribers Must Be Increased

BY W. H. LLOYD

HERE in the United States is located the huge dynamo which drives the complicated machinery of this country's military power. On June 15, 1917, a few months after we cast our lot with the allies, our first dynamo was set up. It was cored with the pure metal of patriotism and wound with the millionfold strands of American capital. Two billion one-dollar strands were to be used in the winding. So large was the core, however, that about 4,000,000 people, who had charge of the work, decided that more strands would be required and $3,035,226,850 was subscribed for our first Liberty loan. More power soon was needed however, and another generator was ordered half again as large as the first one. Over twice as many people helped to build it and on Nov. 15, 1917, a $4,617,532,300 machine was set up. So extensive became our effort in the cause of sane nations, that after the elapse of another six months, Uncle Sam called for a third dynamo of similar dollarpower, namely $3,000,000,000. By this time the habit of supplying more than was asked of them, had become firmly fixed with the American people. While the oversubscription to the third loan was not as great as for the second, still $1,176,516,850 extra was turned into the country's powerhouse and on May 9, 1918, a $4,176,516,850 machine was placed in operation to help to drive the Germans back to and even beyond their frontier.

Now, however, with an army of about 2,000,000 men in France ready for and engaging in battle, and a similar number in cantonments preparing to go, more motive power is required. Almost daily expenditures are increasing. Funds must be forthcoming to feed, clothe and equip our men and prepare them for the approaching winter. So gigantic has become the country's war machine that to maintain uninterrupted operation, another dynamo is required, twice as big as the last.

So on Sept. 28, not the 18,308,325 people who built the third machine, but the entire 103,000,000 people in the United States will be asked to subscribe to the fourth Liberty loan of about $6,000,000,000. Some idea of the extent of the nation's requirements for money is gained from comparative costs of the war today and of the Civil war. That four-year period cost the federal government $3,027,791,000, exclusive of pensions and interest on the public debt beyond the actual war period. That amount now is expended in about 50 days, since the United States is spending approximately $60,000,000 daily as its share of the present conflict's cost.

Records of Past Liberty Loans

	FIRST	SECOND	THIRD
Amount of loan	$2,000,000,000	$3,000,000,000	$3,000,000,000
Date of issue	June 15, 1917	Nov. 15, 1917	May 9, 1918
Date of maturity	June 15, 1947	Nov. 15, 1942	Sept. 15, 1928
Interest rate, per cent	3.50	4.00	4.25
Amount subscribed	$3,035,226,850	$4,617,532,300	$4,176,516,850
Amount over-subscribed	1,035,226,850	1,617,532,300	1,176,516,850
Per cent of over-subscription	52	54	39
Number of bond buyers	4,000,000	9,420,000	18,308,325
*Per cent of bond buyers	3.89	9.15	17.75
Average investment in bonds per buyer	$765	$490	$228
*Average investment in bonds per capita	30	45	40

*Based on population of 103,000,000.

Each successive loan has made the kaiser reel. He has been made to realize that the nation is standing staunchly and firmly, with its unlimited resources, back of every man who wears its uniform. If Germany was ever right, it was when she said that we are a nation of money-mad patriots. We are money-mad. Money-mad to the point of consecrating every dollar obtainable, not alone to take care of our army over there, but to conclude the job the allied nations have on their hands and bring that army back home. Fresh realization of this fact will accrue to the kaiser and his hunnish hordes, shortly after Oct. 19, when the complete returns are in from the fourth loan campaign.

Preparation for a particularly strenuous campaign already is being made. Organizations are being lined up. The iron and steel industry, and its allied trades are marshalling their forces to eclipse former records. No difficulty is anticipated in the flotation of this next loan. Solicitation machinery is bound to work more smoothly than it has heretofore. One of the greatest factors which presage success is the daily reminder of war's awful cost of another kind. The war is brought nearer than ever to the stay-at-home army by the daily printing of a casualty list in the newspapers. This stay-at-home army wishes to see the casualty list's last appearance. This stay-at-home army is made up bond buyers. The major portion of the bond buying army is affiliated with the iron and steel industry.

All the aspects of solidarity presented by the military armies in France, are seen in the industrial armies over here. For putting the new loan across many have learned much from the experience of others and of their own initiative, plan to adopt original ideas.

In all probability the greatest record in the past loans was made by the employes of the Bethlehem Steel Corp.'s 12 plants. At the end of a 7-day campaign for a total subscription to the third loan of $5,240,000 among 69,874 employes, $5,777,650 had been subscribed by 94.3 per cent of the workmen. This means an average of $87.50 per man. After a meeting at Bethlehem, at which an organization plan was developed, each plant was separated into divisions. Each division had a captain who had 10 first lieutenants. Each of the 10 first lieutenants was assigned 10 second lieutenants. The Bethlehem plant with over 28,000 employes had 15 divisions, 15 captains, 150 first and 1500

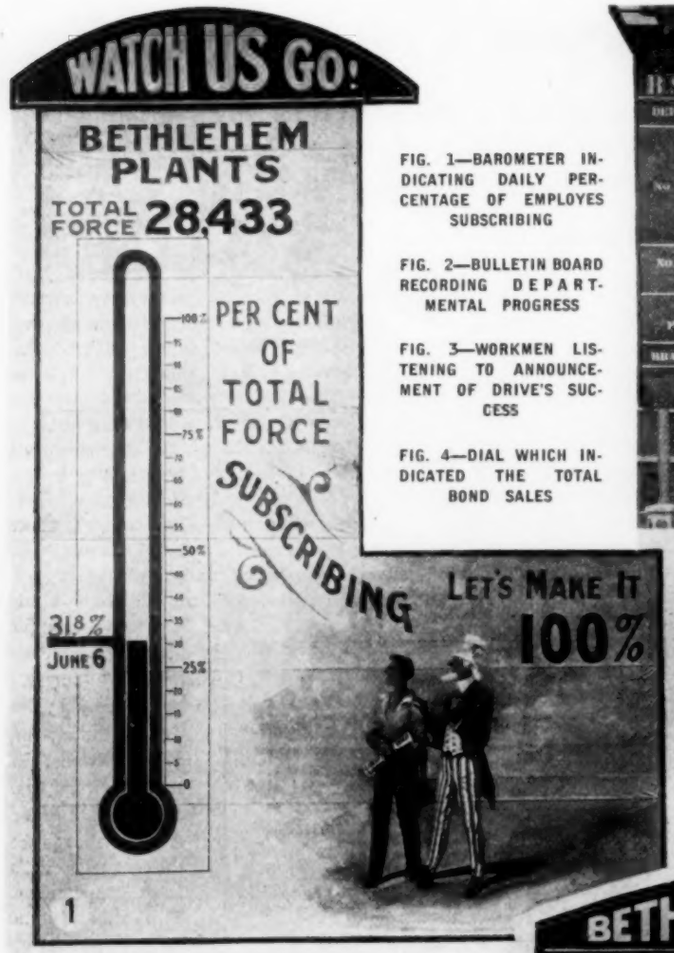


FIG. 1—BAROMETER INDICATING DAILY PERCENTAGE OF EMPLOYES SUBSCRIBING

FIG. 2—BULLETIN BOARD RECORDING DEPARTMENTAL PROGRESS

FIG. 3—WORKMEN LISTENING TO ANNOUNCEMENT OF DRIVE'S SUCCESS

FIG. 4—DIAL WHICH INDICATED THE TOTAL BOND SALES

second lieutenants. Each second lieutenant had a list of about 20 names which he personally solicited. Each day's results were recorded on a large bulletin board erected at the main gate of the plant. The captain who had made the best record during the previous 24 hours was given the privilege of turning the hands of the dial to indicate the number of dollars subscribed to date. In the accompanying illustrations, Fig. 4, shows this dial with the indicator placed at $2,066,950, which was the subscription of 97.8 per cent of the South Bethlehem plant's employes. Fig. 1 shows the barometer which indicated the percentage of employes subscribing from day to day, while Fig. 2 shows a bulletin board erected in the yard at New Merchant mills, indicating daily progress made in the various departments, with a group of the lieutenants beneath who had the drive in charge. Fig. 3 shows a crowd of workmen cheering the announcement that the $2,000,000 quota had been exceeded by $66,950. Three captains were tied for first place on the campaign's last day and they helped to shove the indicator to the $2,066,950 mark.

Speeches Arouse Enthusiasm

This remarkable record was accomplished solely by an appeal to the men's patriotism and love of country. Great impetus was given to the campaign as the result of mass meetings at which addresses were delivered by prominent speakers, including E. J. Cattell, Franklin Spencer Edmonds and Walter C. Janney, chairman of the Philadelphia Liberty loan committee. Charles M. Schwab likewise delivered one of his typical addresses which fired the men with enthusiasm. Due to a sound magnifier, a speaker is able to reach the ears of over 25,000 people at one time at Bethlehem and this has been a wonderful help.

Returned soldiers are potential bond salesmen. Information comes from Washington that all wounded soldiers who are able to do so, will be asked to visit cities where audiences will be arranged for them. Applications for these talks should be filed with local Liberty loan committees. Experience has proved that talks such as these soldiers are able to give are a never failing means of obtaining bond subscriptions. In many cases the soldiers carry the marks of war's ravages and in the minds of their hearers immediately is inspired the thought: "If these boys have done so much and with so many others have offered their lives if need be, why should there be any slacker dollars."

With the slogan "every dollar a crack at the kaiser," the Youngstown Sheet & Tube Co., Youngstown, O., likewise conducted an exceedingly successful campaign for the third Liberty loan. In spite of the fact that a large proportion of the company's employes are of foreign birth and many of them immigrants from enemy countries, practically 100 per cent or 12,417 men subscribed $1,110,350. Each department was handled by its own committee and the results achieved in each department are given in the following table:

Department	Subscribers	Amount	Avg.Amt.
By-product coke plant..	223	$ 25,650	$115.02
Hubbard furnaces (exclusive of mech.)	242	20,700	85.53
Blast fur. (E. Youngs.)	292	22,100	75.68
Open hearth	562	56,550	100.61
Bessemer plant	911	80,500	88.36
Skelp and puddle	733	84,650	115.48
Sheet mill	742	101,550	136.85
Tube mill	2246	138,400	61.62
Rod and wire	558	39,550	70.87
9-in. and 12-in. mill	182	14,450	79.34
Mechanical	2710	221,000	81.54
Transportation	228	25,200	110.52
Construction and labor..	632	75,750	119.85
Shipping	673	54,950	81.64
Chipping and inspection	226	15,350	67.92
Safety	519	50,050	96.43
General miscellaneous	719	82,050	114.11
U. S. gov. inspection	19	1,900	100.00
Total	12,417	$1,110,350	$ 89.42

PATRIOTIC MEETING AND FLAG RAISING AT PLANT OF THE TOLEDO MACHINE & TOOL CO., TOLEDO, O.

To the employes' subscriptions was added the company's quota of $1,000,000. In the second campaign the company subscribed for $2,375,000, and the employes took $1,065,000 worth of bonds while of the first bonds, the employes' total of purchases was $581,000 and the company's $3,275,000. In addition to speeches made to committee members, a few speakers were taken through the departments and the men were allowed to case work to listen to short addresses.

Where Baseball is Essential

A permanent war fund committee has been established at the plant of the Timken Roller Bearing Co., Canton, O. This company's employes

number about 3000 people. In the Liberty loan campaign, these were divided into nine teams and each team was given the name of a big league baseball club. The steel mill workmen were called the "Giants," the general office the "Red Sox," the tube mill, the "Senators," etc. These three teams had a batting average of 1000 per cent. Each of the nine teams has a captain and each captain has as many lieutenants as he chooses. The lieutenants interview each employe. Approximately 58 per cent of the working force subscribed to the first loan, 97.5 per cent bought the second issue and 97.9 per cent signed up for the third. Here too the services of returned soldiers were employed to arouse enthusiasm. Some particularly fine talks were given to the men by returned Canadian soldiers. A flying squadron's efforts were used only after other efforts failed to line up the stragglers. Literature prepared by the company's advertising department, introducing many original features, was of great service in arousing interest and patriotic enthusiasm.

Three Times Over the Top

Another wonderful record was made at the Schenectady, N. Y., works of the General Electric Co. In the first loan, 13,309 work people subscribed to $1,057,400 worth of bonds; in the second, 20,950 people took $1,515,600 worth and in the third, 21,869 signed up for $1,646,600. The company's slogan was "over the top for a million" and many methods were employed to arouse enthusiasm. A committee of 1000 arranged for parades, rallies, mass meetings, etc., but here as well as in many other plants, departmental competition was perhaps one of the greatest factors in putting the loans across. For the second loan, a large signboard was erected in the yard on which was painted a large dial. An indicator, moved forward from day to day, showed the progress of the drive. A different board was erected for the third campaign. This depicted a first line trench with a soldier going over the top. On each firing step was printed each succeeding day's results, until the last step was reached with the total of $1,646,600, or $646,000 over the goal.

In the accompanying illustration is shown one of the patriotic rallies conducted by the Toledo Machine & Tool Co., Toledo, O. Approximately 90 per cent of this company's product is required for war work and no effort is spared to have its employes realize how closely affiliated is their effort with the effort of the boys in uniform. Their loan records are practically 100 per cent. At mass meetings, rallies and flag raisings, speeches are made by prominent citizens and officers returned from the front.

An indication of the cumulative effect of recurrent calls for loan subscriptions is seen at the plant of the Brown Specialty Machinery Co., Chicago. While its office and sales force purchased bonds of the first and second issues, none of the men in the works would subscribe, in spite of a personal canvas. For this stand, the men gave as their reason, that all their wages were required for living expenses. A personal letter sent to each man prior to the third loan however, setting forth the installment plan of payment, and reasons why the bonds should be bought brought subscriptions from all but eight men.

Bonds' Buying Power

ONE $50 Liberty bond will render 666 soldiers relatively safe from typhoid or will make 400 operations painless.

One $100 bond feeds a soldier for eight months.

Three $100 bonds clothe a soldier and feed him for one year in France.

One $500 bond buys supplies for the headquarters company of an infantry regiment.

One $1000 bond buys six cases of operating instruments for a base hospital.

$1500 worth of bonds will buy a motor ambulance.

Two $1000 bonds buy a motor truck.

Three $1000 bonds buy rifles for a field artillery battery.

$5000 worth of bonds will equip a company of infantry with rifles.

$6000 worth of bonds buys one Liberty motor.

$9000 worth of bonds will provide a rolling kitchen for a field artillery brigade.

$10,000 worth of bonds fully equips three hospital wards of 50 beds each with beds made up and linen in reserve; chairs, tables, mirrors, foot tubs, 120 towels, pajamas, and bath robes.

$50,000 worth of bonds will construct a base hospital with 500 beds.

$100,000 worth of bonds will buy five combat planes.

Many plants conducted their campaigns with nothing more than the literature distributed by the Liberty loan committee. At the plants of the A. M. Byers Co., Pittsburgh, however an original idea was introduced. As soon as one department's employes had all subscribed that department was presented with a 3 x 5-foot American flag with red, white and blue silk streamers attached, which gave the name of the department, the firm's name and the statement "We are 100 Per Cent Perfect." The men of that department then marched through the other departments displaying their banner. This aroused a strong desire to attain to the 100 per cent mark. The company's slogan was "help puddle the kaiser" and before the third campaign ended, each of the 36 departments was 100 per cent, the total subscriptions were $173,750 from 1500 men, and the company had awarded 36 flags.

Organizes Draftees as Salesmen

R. O. Perrott, secretary and resident manager of the American Clay Machinery Co., Bucyrus, O., is county chairman of the war savings stamp organization in Crawford county. This organization is on a military basis, with drafted men in each township as majors, captains, lieutenants, etc. Successful campaigns for the sale of Liberty bonds are carried on by these different units.

Practically 100 per cent records were made by the mine, blast furnace, dock and vessel employes of Pickands, Mather & Co., Cleveland, in the second and third loans under the installment plan of bond payment. The company's organization was not so complete at the time of the first loan, but an excellent record was made nevertheless, particularly among the employes of foreign extraction. This company claims that its effort would probably have been nil without the personal solicitation of the superintendents and foremen who appealed directly to the men under them and explained all the details, the advantages of and the necessity for the loan. Formerly when a workman left the company's employ, any bond payments he had made were refunded and the company assumed the bond. Now however, instead of a cash refund, it is made in the shape of war savings or thrift stamps and thus is the sale of smaller securities helped and encouraged.

Generally speaking, a Liberty loan organization is like a safety organization—the degree of success attained bears a direct ratio to the enthusiasm, push, sympathy and pep shown at the top. In each previous campaign throughout the great iron and steel industry, success in putting the loan across has depended largely on the personal efforts of the presidents, managers, superintendents and foremen. The Liberty loan is a challenge to leadership.

Immigrant's Viewpoint Ascertained

Intensive Study of Conditions Surrounding Foreign Workmen in Their Homelands Recommended—Immigrants Divided Into Two Classes—Fair and Square Treatment Should Commence Immediately on Arrival

BY LAZAROVICH-HREBELIANOVICH

RECENTLY I was asked by the chairman of one of the sessions on employment problems to talk about the viewpoint of the foreign workingman. I am not a workingman, never having been in a factory, a manufacturing plant or a mine, though with hard work I am well acquainted. My knowledge of the foreign workingman in this country comes from the fact that my compatriots here have appealed to me for advice and help. Last year the employment manager of a corporation asked me to undertake a welfare job at one of its plants.

The industrial employer's effort is for a maximum of efficiency. The United States industries have not yet sufficiently recognized the value of studying the conditions of the workingman in the lands of his origin. Such study would give industry a knowledge of the man's reason for coming, what grievances he brings with him, his hopes for the future and the peculiar character of his capacities. The employer would be able to meet the man, aid him and at the same time promote industrial efficiency, since a workman who believes that he is being dealt with humanly and squarely is contented and satisfied and will give willingly, the best that is in him; justice and a fair deal is all he wants.

The efficient individual industrial enterprise as well as industry as an entity, in considering the labor problem, cannot afford to neglect the study of the moral element. This should include a thorough investigation of conditions and environments of the immigrant workman in his home land.

Workmen Divided in Two Groups

The foreign workmen in the United States may be divided into two groups: I, of northwest European origin; II, of east and south European origin. The first group consists of: British, Scottish, mainly Irish—then Germans, French and Scandinavians. The second group of: Lithuanians, Poles, Russians, Slavs from Austria-Hungary, from the Balkans (Macedonia) and of Italians and Greeks. The groups are radically different. Men of group I on the whole have been industrial or agricultural workers, living from hand to mouth. They come to the United States intending to settle, to make homes and improve their economic conditions. In group II they are generally from agricultural districts, in most cases farmers, many of them owning some land and a few head of cattle. They come lured by advertisements to earn money to pay off mortgages at home. Bad agricultural conditions, coupled with political and religious persecution, are direct causes of such emigration.

Question is Complex

THAT maximum industrial efficiency has not been attained hitherto because immigrants have not be taken in hand upon arrival and educated to America's best possibilities; that to fit themselves effectively for such productive and profitable effort, employers should study conditions existing abroad from where their labor supply must come; that labor has been much misunderstood and wronged because this has not been done and that blame for much of the industrial unrest and disturbance which has existed lies at employers' doors for their lack in this respect, are some of the salient conclusions of the paper by this soldier-statesman-author-lecturer-engineer.

Italians and Greeks are in a class by themselves. The Italian immigrant comes from towns in southern Italy. The Greek is also generally a townsman who comes to better his earnings, with no intention to settle. He sends all his earnings back home.

Characteristics of the first group: Individualistic; brutal and rough; no co-ordination; each man for himself. Nearly all are married men, having sooner or later their families with them.

Characteristics of the second group: Fundamentally co-operative; most have been soldiers; are used to obedience, discipline and hard life, but unwilling to accept brutal and rough treatment; generally illiterate, and unskilled; quiet, cheerful and willing. They retain of their earnings only what is absolutely necessary for their existence.

The living standards of group I are lower in their home lands than those of group II. Here the contrary is true: the living standards of group I are far above those of group II, which in America are miserable. Group I spends its earnings for new and better homes in America. Group II is here to earn money and go back, hence willing to do harder work under worse conditions than group I. These circumstances lead to the first misunderstanding by the employer. He assumes that the men of group II do not know better conditions, and treats them accordingly. He cannot imagine that in reality their home standards of living are fully equal to the standards of American workingmen. The employer is astounded that they will return home at the least call of emergency. The man coming here does not find things as depicted by the steamship and labor agents, and he is disillusioned. He becomes distrustful and often most bitter.

The man of the first group, individualistic in his tendencies, comes from where the individualistic civilization resembles that of the United States, to seek a new home. He quickly finds his place and it is natural for you not to draw a line between him and your native-born workman. The matter is different in regard to the Slav belonging to the second group. Co-operation, not individualism, is the basis of all his social organizations. He lives, works and thinks in groups, whether in agriculture, handicraft or industry.

Co-Operative Units Described

Serbia is my country and is not much spoken of here in America. We have suffered from the Austrians, Germans and Bulgars, and are suffering unspeakably more than Belgium ever suffered. In Russia they have the "Mir," that is the village community, as the co-operative unit. In my country we have the family or working group as the co-operative unit. Co-operative units composed of 30 to 40 members will live well on 100 acres, are well clothed, and put several hundred dollars aside each year, besides paying taxes and providing for improvements. Here is the basis of one of the difficulties which that type of foreign workman meets in this country. He is looked on as an inferior being. Abroad, in his home, his living

From a paper presented by Prince Lazarovich-Hrebelianovich, before the February meeting of the American Institute of Mining Engineers, in New York City.

standards are as high as those to which you are accustomed. You approach him, you want to help, but you think the miserable conditions in which he lives are suited to him. If he ever had an idea of settling here, that idea is often taken away from him during his first few days in the country. If you knew what the immigrant of what I call the second group has often to pass through after he lands here, and with what faith he comes, you would realize his disappointment and misery. At Ellis island he does not find friendly arms to welcome a new son of freedom, but instead, many bewildering conditions, among which are the agents of several kinds lying in wait for him. He probably goes to one of the boarding houses called "immigrant homes." In some of these he fares well, but there are others, unfortunately; "homes" perhaps in which the "rich Mrs. So-and-So and the rich Mrs. So-and-So" are interested—ladies whose pleasure in doing a good work, would become horror if they knew what really happens to the girl immigrant, or the dazed workingman ignorant of English, cheated and robbed of the few cents he lands with, then sent to some factory or mine, bound to pay part of his earnings to the boarding-house keeper and fees to a labor agent. When you come to him at this moment with Americanization ideas, you come to a man weary and sore. You do not understand what is the matter and you don't know how to handle him. He distrusts you, and he is driven into the hands of political tricksters and other propagandists who are no more his friends than they are yours. He gets on a little perhaps finds fellow countrymen, forms a household group with them and sometimes creates possible living conditions for himself, entering perhaps some workers' mutual organization. We have quite a number of these in America and they are of the greatest value to the workman, wherever they are run as they ought to be. But when they chance to fall into wrong hands, they can become the means of cruel exploitation of their members and organs of other mischief.

It is a habit to accuse the foreign worker as being a man of subversive tendencies, etc. Nine times out of ten he is not, and nine times out of ten he is the innocent and suffering victim of smug, clever and powerful gentlemen who use him and his troubles in their political machinations.

Foreman System Criticized

One great hardship of our foreign workmen here in America is connected with the foreman system, especially where the men are engaged by the foreman. The large majority of our men are not Roman Catholics and most of your foremen are Irish. Immigrants from non-Catholic districts of Austria-Hungary are not Roman Catholic and many have abandoned that country because religious and state persecution in Austria-Hungary are one and the same. They left it with a hatred against everything Roman Catholic. Give him that foreman, an Irishman and a devout Roman Catholic, as his boss and nothing is bad enough for the "Hunkie." These workmen were all soldiers, and our men in certain parts of Europe do not value human life more than the price of a cartridge. We don't think much of fisticuff fighting, but we shoot, as your westerners do. When one of our men is touched by a foreman, the spirit of the vendetta is up. It might not come out at the moment, he might not knock his tormenter out immediately, because he thinks: "I am in a foreign country, I have to be more clever than that." Thus he tries other means. One of the most terrific of those events you had in East Youngstown, O., in 1916. The working population there was mostly of foreign extraction and the matter really, as far as I understood from workmen themselves, started in trouble with foremen. Men had been beaten, and the mass fired into. Even a "Hunkie" is human, and a man. His patience—and he has patience to be admired—comes to a limit at last. Outbursts such as that of East Youngstown are the result.

In short, the foreign workman should be studied in the land of his origin from the human point of view. More extensive measures should be adopted from the moment he lands to make him see the best side of America, the America which somewhere does exist as he pictured it, and which was typified in his dreams.

Induction Motor Pedestal Insures Safety

IN manufacturing operations, safety and efficiency are so related that an improvement in either usually effects an improvement in the other. More and better work is produced when light, air, sanitation and disposition of machinery are such that working conditions are pleasant and healthful, and comparative freedom from liability to occupational or accident disability exists. In connection with safety requirements, the panel shown in the accompanying illustration is of considerable interest. It is adapted to the control of alternating current feeder or motor circuits in capacities up to the rating of the oil circuit breaker.

By referring to the illustration, it can be seen that the unit consists of an oil circuit breaker mounted on a pedestal constructed of steel plates and angle iron, the former holding the latter in position and serving as mountings for the apparatus in the interior of the pedestal. The compartment imediately beneath the breaker and surrounded by the steel plates is used for mounting the potential and current transformers. The space above the switch serves as a housing for the disconnecting switch, and also provides a location for either voltmeter or ammeter or both when desirable. Other instruments such as watthour meters, etc., may be mounted on the sheet-steel front of the panel. The back of the pedestal is a removable sheet steel plate.

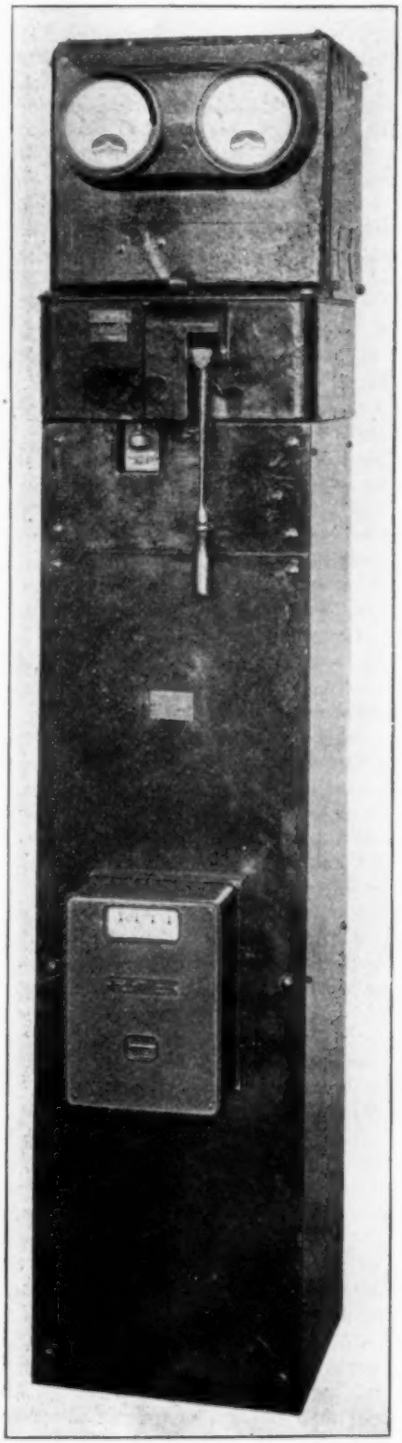
The voltmeter and ammeter are mounted on a cast base above the breaker, with the front edges of the instruments flush with the casting. Back of the instruments in the interior of the housing are spring contacts which make contact with the instrument studs, so that after removing the holding screws the instruments can be removed from their support without disconnecting the leads. When the instruments are replaced, the connections to them are made automatically. The instrument resistances are mounted behind the instruments. The watthour meter is mounted on the lower front of the pedestal. The studs run through insulating bushings to the interior where they are connected to the leads from the current and potential transformers which are mounted on strap iron supports. The drilling of the supports permits mounting either one or two current and potential transformers without additional drilling.

The circuit breaker is operated by an iron handle from the front. Automatic protection is obtained by two series overload coils provided with dashpot time-limit trip. The oil circuit breaker can be operated only when the disconnecting switch is closed.

The disconnecting switch is operated from the front by a handle so interlocked with the circuit breaker that the disconnecting switch can be operated only when the breaker is

open. The breaker can thus be cut out of service at any time when open, and can be inspected or repaired without danger. The oil tank cannot be taken off the breaker nor can the disconnecting switch cover be removed unless the disconnecting switch is open. The disconnecting switch and the oil circuit breaker can both be locked open by removing the switch handle, which can be removed or attached only when the disconnecting switch is open.

It is impossible to get at the live parts of any of the apparatus until portions of either the back or the front of the pedestal have been removed. The panels occupy small space and are easy to install. Pedestal type units are designed for single or group mounting and have a large bus compartment just above the disconnecting switch and inside the cast-iron housing. Connections run either to top or bottom of the pedestal, but as a rule the leads enter from the bottom. After being put in place the pedestals are secured by bolting to the floor. The pedestal is manufactured by the General Electric Co., Schenectady, N. Y.



SHEET STEEL PEDESTAL FOR INDUCTION MOTOR

A new type of boring tool holder has recently been developed by the Ready Tool Co., Bridgeport, Conn. It was designed for use on vertical turret lathes and boring mills, where a rigid tool holder is essential. The holder is of such form that it will fit the tool posts. The tool can be used either right or left hand and the cutter is supported on the bottom and backed up against the feed of the cut. As the cutter is held in place by means of hollow set screws, there are no projecting points to interfere with the correct setting of the tool in the tool post. The device is case-hardened inside and out to protect it

Book Review

Essentials of Sheet-Metal Work and Pattern Drafting, by J. S. Dougherty; cloth; published by the Peck, Stowe & Wilcox Co.; and furnished by THE IRON TRADE REVIEW for $1.50 net.

Vocational training is more and more becoming a feature of grammar and secondary schools. It is with a view to furnishing a suitable text for the study of sheet-metal work in the public schools that the present volume has been issued. It contains a complete description of tools, machines and methods for making various articles. Sketches drawn to scale illustrate the text and add to its value. Machinery and tool dealers will also find the book of practical value.

A Motor-Driven Drag Line

Electricity Instead of Steam Used in Operating Drag Line Excavator—Some Costs for Mine Stripping

RAILROADS, municipalities, and many mines for several years have used drag-line equipment for their excavating work. In most cases steam power has been employed. The Locust Mountain Coal Co., Shenandoah, Pa., has for some time made use of a motor-driven drag line excavator with a 3½-ton bucket for stripping coal beds, the stripping being carried to a depth of from 14 to 30 feet. When rock is encountered it is drilled and blasted before removal.

The advantages claimed for the electric driven equipment include freedom from cold weather losses and delays and a saving in labor costs. The accompanying cost figures are offered, by the company, covering the stripping of 256,710 cubic yards during one year's work.

The main machinery of this excavator, which is driven by a direct-geared 150-horsepower slip-ring motor, includes two drums, one of which winds the rope that drags the bucket through the dirt and the other operates the hoist rope. There is a small drum for raising and lowering the boom. The swinging machinery is operated by a 75-horsepower motor driving a vertical swinging shaft

Total and Yardage Costs of Stripping 256,710 Cubic Yards of Earth

Classification	Labor — Amount	Labor — Per yard	Material — Amount	Material — Per yard	Total cost per yard
Shovel crew	$1463.50	0.0057	82.26	0.0003	0.0060
Pitmen	1697.80	0.0066	5.16	.....	0.0066
Blasters	107.02	0.0004	1804.22	0.0070	0.0074
Repairs and maintenance	317.08	0.0012	1274.89	0.0050	0.0062
Electric repairs and maintenance	318.64	0.0012	16.24	0.0001	0.0013
Transmission lines	74.56	0.0003	7.60	.....	0.0003
Power	....	.....	2038.26	0.0079	0.0079
Foremen, etc.	339.16	0.0013	2.25	.....	0.0013
Clerk	40.50	0.0002	.....	.....	0.0002
Hauling	36.73	0.0001	.....	.....	0.0001
Miscellaneous	1664.13	0.0065	13.00	0.0001	0.0066
Total	$6059.12	0.0236	$5243.88	0.0204	0.0440

by means of three gear reductions. The magnetic control panel which was furnished by The Cutler-Hammer Mfg. Co., Milwaukee, consists of double-pole magnetically operated switches equipped with series relays. The master drums are of the bevel gear type and are mounted over the operator's head. The main controller is equipped with jamming relays so that resistance is automatically cut into the circuit when the motor is stalled, giving protection and digging characteristics similar to the steam operated drag lines. The controller for operating the swing motor is equipped with a plugging switch which makes it possible for the operator to throw the controller quickly to maximum speed and to reverse at full speed. Because of the momentum of the boom it is seldom necessary to reverse at full speed, as the power may be cut off at some distance ahead of the end of the swing in either direction.

Standardizing Rolling Mill Motor Ratings

BY K. A. PAULY

STANDARDIZATION of the capacities of large rolling mill motors in the sense of the ordinary interpretation of the term "standardization" can hardly be carried out because of the wide variations in speeds and frequencies required for each size of motor, but no serious difficulties stand in the way of the standardization of the name or rating of these motors. The standardization of ratings will materially assist the mill engineer, simplify the work of the purchasing agent and will tend toward the standardization of capacities.

Tonnage from the steel producer's standpoint is the most important consideration and our rating must be such as will indicate the capacity of the motor to produce steel. Three factors, reduction per pass, peripheral speed of the rolls and total idle time, that is, intervals between passes together with time between successive ingots, affect the tonnage. By an assumed adjustment of these variables with relation to each other, any one may be varied between wide limits without affecting the capacity of the driving motor, but we are not free to manipulate all of these variables, in fact one or two and frequently all are fixed by rolling practice. Recognizing this we may make the following general statements:

The maximum loads are increased by increasing the reduction or speed, or both, but are not affected by changes in idle time. The tonnage output of the mill and the root mean square value of the load cycle increase with increased draft or speed, and decreased interval passes and ingots. The root mean square value of a load cycle determines the continuous capacity of the motor capable of performing the work represented by the continued repetition of the cycle, and, as the root mean square varies directly as the tonnage, the continuous capacity of a motor may be taken as a measure of the capacity of a given machine to produce tonnage.

From a paper presented at the twelfth annual convention of the Association of Iron and Steel Engineers, Baltimore, Sept. 11-14. The author, K. A. Pauly, is an electrical engineer in the power and machinery department of the General Electric Co., Schenectady, N. Y.

To properly define an equipment to meet any given rolling cycle we must state its every ingot maximum momentary capacity, i. e., the maximum momentary load which can be repeated one or more times for each ingot as is required to meet the normal load cycle, its emergency maximum momentary capacity at infrequent intervals to take care of variations in draft and temperature of the steel, or any other factors which may occasionally produce peaks greater than those required to meet the normal cycle, and its continuous capacity which must be equal to or greater than the root mean square value of the load cycle if the equipment is to be capable of producing the specified tonnage.

For our purposes it is unnecessary to consider the effect of these limiting requirements on the design of rolling mill motors further than to state that either the continuous or the maximum momentary capacity, depending upon their relative values, may determine the machine. Accepting this, a machine may be rated by either the capacity which it will carry continuously or the maximum capacity for a specified time, which latter rating must be equivalent from the standpoint of heating to the rolling load cycle. Obviously, it is not necessary to include both the continuous and the maximum capacities in the rating, but a statement as to the one not included in the rating should appear in the specifications, and the question immediately arises which best serves our purpose in the rating. To be of real value, our rating must be such that it can be easily reproduced for test purposes with as little as possible left to the judgment of the engineer making the measurements. It must not be subject to varying interpretations by different engineers.

Reproducing local conditions is perhaps the ideal way to test the fitness of a machine but this is not practical in advance of its being installed on the mill and, even then, it is questionable whether actual contract conditions can be reproduced should there be a difference of opinion as to whether the contract obligations had been met. If the maximum capacity is to serve as the basis of rating we must also include the time during which this load is applied continuously or intermittently (one minute on and one minute off) to be equivalent to the rolling cycle from the standpoint of heating.

Eliminating the maximum capacity as a basis of rating there appears but one other, continuous capacity with a given temperature rise, which is at all suitable for our purpose. The continuous capacity, without a statement as to the maximum capacity, does not necessarily indicate the fitness of a motor for a given rolling cycle, but the overload capacities can better be made a part of the specifications, as do the efficiencies, etc., than to complicate the rating by including them.

The rating which is merely the output marked on the nameplate should bear the same relation to the continuous capacity for all machines, if it is to serve as a means of comparing different equipments. Obviously, a rating equal to the continuous capacity as defined by the A. I. E. E. fulfills all requirements covering rating, and in the writer's judgment that rating should be adopted as a standard for large rolling mill motors. The suggested standard rating follows: The rating shall be the continuous capacity with a temperature rise not exceeding the temperature limits prescribed by the A. I. E. E. The principle upon which machine ratings are based by the A. I. E. E., so far as relates to thermal characteristics is that the rated load, applied continuously or for a stated period, shall produce a temperature rise which, superimposed upon a standard ambient temperature, will not exceed the maximum safe operating temperatures of the insulation. Efficiency and power factor guarantees shall be based on this rating.

When forced ventilation is used the specifications shall state the number of cubic feet of air required per minute and that the temperature guarantees are contingent upon this special amount of air being passed through the machine.

Safety Rules Reduce Plant Hazards

(*Concluded from Page 716*)

improper positions. Matters of this kind should be discussed with plant employes and managers, pointing out to them the disastrous results that might follow.

Yardmen and trainmen should be unusually cautious and careful about disturbing cars that are being loaded or unloaded. Due notice should be given men working in or about the cars before coupling is made. At all obscure points, where the view is not entirely clear precaution should be taken by both yard and industrial men. Sufficient lights should be maintained at night. Yardmen should be coached to be careful and to keep a sharp lookout, to sense the danger at any given point, anticipating what the other fellow might do, for there are a great many train and enginemen who avoid accidents and personal injuries by figuring ahead and having in mind the conditions at hand. Division officers, yardmasters, engine foremen and yardmen generally can assist in this matter by talking with industrial employes, calling attention to the danger of the unsafe practices.

Teamwork Brings Results

But, after all, it is teamwork that wins, together with a sincere and earnest desire to reduce personal injuries by taking an interest in your brother worker, causing him to think and act in a safe and sane manner; showing a brotherly feeling of interest for his welfare and thereby greatly assisting in bringing about that sincere feeling of friendship that should prevail throughout the world today. The railroad administration is making a strong crusade in the interest of safety. It is a step in the right direction, toward a systematic method of conserving our man power. When we read of the terrific losses on the western front it should strengthen our determination to do our part in assisting to stop the unnecessary loss "over here." Every man and woman has a distinct service to perform and we must put forth every effort in an educational manner in order to secure earnest and sincere interest in the great work of thinking and practicing safety in our railroad work. In carrying out this thought and working constantly in that direction there will be greater conservation of life and limb, and at this time, when every ounce of man power should be used effectively "over here" and "over there," we will be doing our part to help win the war. This factor we must bear in mind.

Ordnance Dept. Encourages War Workers

THE army ordnance department announces the establishment of an educational section for the purpose of increasing productive efforts in the plants engaged in the manufacture of ordnance material.

The activities of this section are under the direction of Maj. F. L. Thompson and Capt. C. R. Dickinson, and will be aimed to carry home to the individual worker, to the employer or employe, the fact that his own personal efforts will have a direct bearing on the winning of the war. The agencies employed include posters, booklets, pay envelope stuffers, newspaper publicity, display advertising, motion pictures, public speakers and exhibits.

Posters carrying a message of encouragement to the worker tending to inspire greater individual effort are sent out to the manufacturing plants at regular intervals. Some of these, notably, "Not Just Hats Off to the Flag, But Sleeves Up for It," have been remarkably successful, according to the more than 900 letters received by the ordnance department regarding it.

To Increase Morale

Booklets and pay envelope stuffers are used to convey inspirational messages to the home and thereby tend to increase the morale of the community. An edition of 2,000,000 of one of the smallest posters ever issued, bearing a message to the individual, was distributed in a number of cities on Labor day by means of aeroplanes dropping them over the course of the parade.

In the neighborhood of 1000 plants working on war materials now have motion picture projection rooms and have been furnished films with a distinct appeal to the worker such as the government films "Pershing's Crusaders" and "America's Answer." These films have proved very successful in definitely linking up the work of the man at the lathe with the boys at the front.

In the same manner, speakers, many of them foreign soldiers returned from the front, have been furnished to meetings of plant employes, and have given their hearers first hand information as to how necessary it is to speed up production.

In some instances it has been found desirable to encourage public exhibitions of locally made material used by the army as a means of arousing local pride and stimulating interest in war work. Several exhibitions of this kind illustrating the use to which the *materiel* was put in actual service, have been the direct means of increasing the pride of the citizens in their town and consequently in their own work.

In order to centralize the work and afford increased service to the various war working plants, it has been decided to appoint a representative of the industrial education section in each of the 11 district ordnance offices as follows:

Bridgeport, Conn., Ralph P. Boas, formerly instructor at Brown and Harvard universities; Boston, D. D. Cassidy, architect; New York, Maj. J. G. Kitchell, U. S. A., formerly president Etheridge & Co., advertising agency; Philadelphia, J. W. Watson, president, American Bronze Co.; Rochester, N. Y., William H. Gorsline, Rochester chamber of commerce; Pittsburgh, Charles Yon, Pittsburgh & Lake Erie railroad; Detroit, W. G. Pipp, editor, *Detroit News*; Cincinnati, Carl M. Jacobs, Jr., vice mayor and former assistant city solicitor; Chicago, C. L. Benjamin, Gray & Benjamin, advertising agents; St. Louis, Homer Hall, assistant district attorney. The representative for the Cleveland district has not as yet been appointed.

These men are to be responsible in their respective sections for the activities of the industrial education section which will act as a service agency at the disposal of the various district ordnance chiefs to assist them in increasing productive effort.

Production of Graphite

A bulletin recently issued by the geological survey shows the increase in metal manufacture incident to the progress of the war has brought about a greatly increased demand for crucible graphite. As a result, the amount of graphite suitable for crucible use, both domestic and imported, consumed during the year was approximately 30,000 short tons, as against 13,500 short tons in 1913. The domestic production has responded to the greater demand and during the last three years has shown a

steady increase. This is due to war work.

The actual mine production during 1917 shows a notable gain. The total production, including stocks on hand at the mines, was approximately 14,000,000 pounds as against 10,900,000 pounds in 1916. The figures for sales, however, show a slight decrease. This is due principally to the facts that owing to freight congestion the Alabama producers have had great difficulty in shipping their product and that many new companies have been unable to begin production owing to delay in procuring the necessary equipment. During the last three months of 1917 shipments of crystalline graphite from the Alabama field were only about 25 per cent of the capacity of the mills. The extremely severe winter also curtailed production, both in Alabama and in New York. In Pennsylvania there was a sharp decrease as compared with 1916, due to the remodeling of several of the larger plants.

Estimates furnished by the producers of crystalline graphite show that out of the total sales of 10,584,080 pounds, 6,816,913 pounds, valued at $982,336, or about 64 per cent by weight and 90 per cent by value of the total, was flake graphite containing from 80 to 90 per cent graphitic carbon, in large part suitable for crucible use. The remainder was dust or low-grade flake probably averaging under 50 per cent graphitic carbon.

Three States Lead

As usual, the greater part of the domestic crystalline graphite was produced in Alabama, New York and Pennsylvania. The production of these states was all of the variety known in the trade as flake graphite. In addition, crystalline graphite, resembling in a general way the Ceylon graphite, was prodced in Montana, and a small quantity of flake graphite was mined in California and Texas. The quantity of crystalline graphite in 1917 was slightly less than the sales for the preceding year, but the value showed an increase of 20 per cent over 1916.

Imports amounting to 42,609 short tons entered the country in 1917. These were valued at $8,961,988. After the outbreak of the European war and before the entrance of the United States, guaranties were required by the British and French governments of importers and users of Ceylon and Madagascar graphite, in order to prevent its falling into enemy possession. At present all graphite imports must be consigned to the Plumbago-Graphite association, a voluntary association of importers, which supervises imports and exacts similar guaranties.

Blowing Air Into Electric Furnace Steel

BY C. M. CARMICHAEL

ERNEST HUMBERT, consulting engineer, has been granted patents on a process for making metals in electric furnaces which consists of blowing air into the solid charge of the furnace. This oxidizes the carbon, silicon, and phosphorus, increasing the temperature, thereby, decreasing the power consumption. After the furnace is tapped and all necessary repairs have been made to banks and bottom, it is charged with scrap which immediately absorbs heat from the lining. By the time the principal portion of the charge is in the furnace the lower part has become incandescent. The electrodes are then lowered and the current turned on. The air is introduced into the solid but incandescent part of the charge by means of a pipe, approximately 1 inch in diameter, connected to a flexible hose. The air is supplied at any convenient pressure by a simple compressor or blower.

When the air is blown into the solid incandescent part of the charge, the carbon monoxide formed at the point where the air strikes the metal is immediately converted into carbon dioxide and burns with a white flame, melting the charge very quickly, the pipe being raised from time to time in order to keep the air playing on the solid part of the metal until it is entirely melted. The oxygen in the air oxidizes the carbon, silicon, and phosphorus, causing a great rise in temperature and thereby reducing the melting time. The writer in using this process, found that the time saved on each heat to be from 25 to 50 per cent, varying with the composition of the charge and the metal to be produced, thereby saving from 175 to 350 kilowatt hours per ton of metal produced.

Calculating the Heat

Besides the power saved it is possible by this process to make use of most any grade or kind of scrap, for instance, cast borings or other material high in carbon for making steel with 0.08 to 0.25 per cent carbon without the addition of so much iron ore or other oxidizing material. Such material as a rule creates a violent boiling and a slag heavy in iron oxide; this causes considerable wear to the furnace lining, roof and electrodes. Taking the three fundamental factors which determine practically all steel making processes, the chemical composition of the material, the temperature, and the time, we know that the more perfectly these elements are controlled during the operation, the more perfect are the results obtained. Therefore, knowing the composition of the charge and knowing that one kilogram of carbon oxidized to CO_2 produces 8100 calories, one kilogram of silicon to SiO_2 produces 7830 calories, one kilogram of phosphorus to P_2O_5 produces 5965 calories and knowing the oxygen content of the air, the volume blown into the furnace can be measured. Then it is very easy to calculate the amount of heat that will be generated by the oxidation of these elements thereby showing the amount of power saved, and also the length of time the melting and blowing operation should be continued to procure steel of the desired composition. Also, on account of the extra amount of heat created by the air, the bath, at melting down, is approximately at the right temperature for making such ferro additions as are desired.

Everyone familiar with electric furnace practice knows that the load factor for a period of 24 hours is comparatively low, for the reason that when making steel from cold scrap the demand for the last fifth of the refining period is about 20 per cent less than the demand during the other four-fifths of the time. By introducing air into the solid part of the charge you increase the heat in the furnace, which decreases the melting time, thereby decreasing the demand for power during the melting period, which increases the load factor and the efficiency ratio of electrical energy transferred as heat to the charge.

Not only is this process used to advantage in making steel but also in making pig iron. The writer has found by practice that with the use of air as described in Mr. Humbert's patents for making pig iron in electric furnaces, 350 to 600 kilowatt-hours per ton of metal were consumed, with an average time from tap to tap of 3½ hours, while without the air, the power consumption was from 600 to 800 kilowatt-hours per ton of metal with an average time of five hours from tap to tap.

If we assume a furnace operating with an average power consumption of 750 kilowatt-hours making 30 tons of steel in 24 hours without the introduction of air, 22,500 kilowatt-hours will be consumed.

New Brier Hill Furnace Lighted

Hot Metal From This Stack Will Increase the Company's Open-Hearth Steel Making Capacity—Cold Blast Supplied by Tube Blowers—Electrically Operated Service Elevator Connects Stove Platform

A FEW years ago where the blast furnace production was not great enough to meet the consumption of the enlarged open-hearth capacity at certain plants it was a comparatively easy matter for the company to purchase pig iron in the open market. When the present war broke out the world-wide dependence upon this country for both iron and steel brought about many changes. Demand for pig iron increased to such a stage that it was almost impossible to obtain steelmaking metal under many months delivery. As conditions kept getting worse practically the only recourse manufacturers had was to build more blast furnaces if they were to assure themselves of having their needs properly taken care of. The officials of the Brier Hill Steel Co., Youngstown, O., were quick to realize this condition and consequently authorized the construction of an additional blast furnace. Work was begun last winter and rapid progress was made in spite of the fact that building material was hard to obtain. The stack, which has a capacity of 500 tons per day, was blown in Sept. 20. It is located between the Grace and Tod furnaces and will be known as the Jeannette furnace. In connection with the building of the furnace a car dumper, ore bridge and transfer cars were installed. This equipment will take care of all three stacks with less labor than was required at the Grace and Tod furnace.

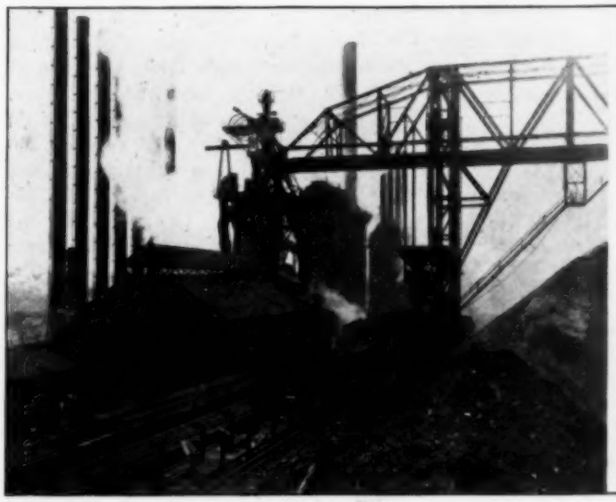
The difficulties attending construction of the new furnace without interfering with the operation of the other stacks were many. The ore-handling plant was installed on the same site as the old trestles; connections were made to existing gas main, cold blast mains, steam piping, water piping, etc.; two old blowing engines were removed to make room for turbo blowers; and, as the old boilers were not large enough they were torn out one at a time as the new ones were built. In addition, the railroad tracks had to be kept in such shape that they would be suitable for both the new work and maintain operation on the old furnaces. These difficulties were successfully met without accident or delay.

Furnace Planned by Company

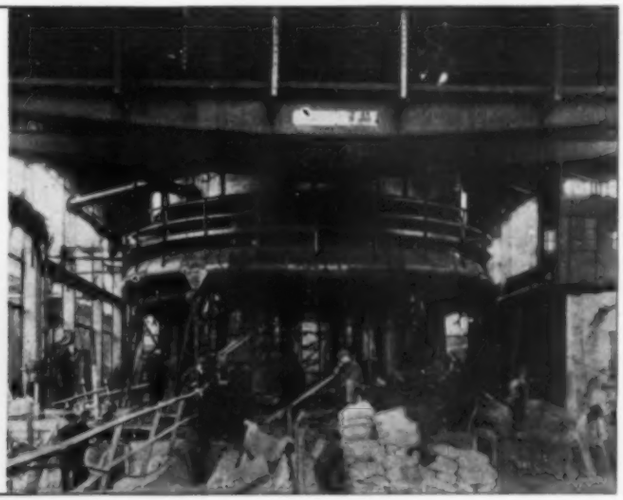
The furnace was designed by the company's engineers; the excavation and concrete work was done by Stone & Webster, Boston; the structural work by the McClintic-Marshall Co., Pittsburgh; and the plate work by the Riter-Conley Co., Pittsburgh. The foundation, which rests on bed rock, is made of a concrete block, 42 feet in diameter and over 16 feet thick. Several courses of brick support the cast-iron base plate, which is 33 feet in diameter. Upon this base plate rests six cast-iron columns, 30 inches in diameter. The mantle ring, 30½ feet in diameter, was made of heavy steel angles and plates. The hearth, 17 feet in diameter, is enclosed in a cast-steel jacket 5 inches thick, over 10 feet high and 26 feet in diameter. The jacket is held intact by means of steel bands and is cooled by cast-iron cooling plates laid against the inside surface. The tuyere jacket is made of steel plates, 1¼ inches thick, with openings provided for inserting copper bosh plates and 12 tuyeres. There are 12 rows of bosh plates.

A combination water supply and waste trough, supported at the level of the mantle supplies cooling water to the bosh and collects the discharge water from it. This trough has two main inlet and two main discharge connections. All feed and discharge pipes are readily accessible from a platform built on the bustle pipe, with hand rail and stairs to the furnace floor. The bustle pipe is 40 feet in diameter and is hung from the furnace columns by heavy rods. By means of the mud gun, crane and holding device, which was built by Edgar Brosius Co., Pittsburgh, the tapping hole is stopped without taking the wind off the furnace. The control levers are located at a distance from the tapping hole, thus doing away with any chances of burning the operator.

The cast house is 60 feet wide, 150 feet long, and 30 feet high. It is covered with steel plates ¼-inch thick, and sided with No. 18 gage corrugated steel sheets. A 10-ton



ORE FROM STOCK PILE IS LOADED INTO A TRANSFER CAR WHICH DISTRIBUTES IT TO THE VARIOUS TRESTLE BINS



EASY ACCESS IS HAD TO VARIOUS 3-WAY COCKS UNDERNEATH COMBINATION MANIFOLD AND WATER DISCHARGE TROUGH

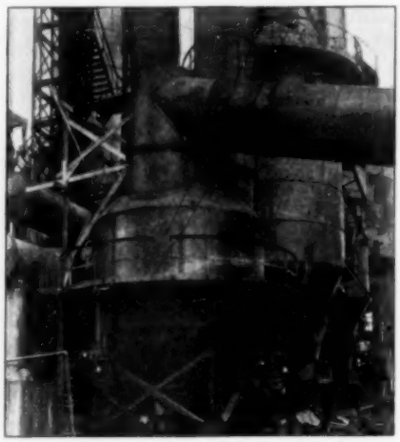
crane serves the cast-house floor. No part of the house is connected to the furnace shell. Extra large ventilators take away any gases that may accumulate. All enclosing walls are of concrete with a rigid hand railing their entire length. The track for receiving the hot metal inside the building will accommodate a train of four ladles with a capacity of 45 tons each. Special stress has been laid on safety, comfort and convenience of the workmen. Every valve, manhole, etc., if more than 4 feet above floor level, is fitted with a platform and hand railing and wherever possible, stairways connect the floors instead of ladders. The furnace top is of the McKee revolving type. Stock is discharged from skip car onto the small bell located at the bottom of a cylinder. The latter is revolved by an electric motor so that each "round" enters the furnace at successive 60 degree points of the circumference.

The gas is conducted from the top of the furnace through four low-type downcomer pipes equipped with deflector plates, to prevent the escape of coke and heavy flue dirt. Above one of these outlets is a bleeder valve. The four downcomer pipes combine into two main pipes which enter a 24-foot dust catcher tangentially. The latter is equipped with an explosion valve, and a cone bottom from which the flue dust can be discharged either into a railroad car or into the flue dirt trench. From the dust catcher, the gas passes to an 18 x 40-foot gas washer of the combination spray and impact type. It then passes into an 18 x 27-foot gas dryer. The gas leaves the top of this dryer and flows to a special water sealed gas valve of new design, and from there to the boilers and stoves. The waste water from the gas washer, dryer and valve is sewered into a large sedimentation basin, which removes all trace of solid matter before it is discharged into the river.

The air for the furnace is preheated in three 23 x 105-foot side combustion, two-pass stoves. Each stove is provided with special devices for changing the hot-blast valves and seats. The waste gases from each stove are exhausted through two chimney valves into an underground flue which is connected with a centrally located brick lined stack, 200 feet high. The blow-off pipe is connected with the chimney flue, thus doing away with the noise usually accompanying the blowing-off of a stove. The stove floor is 7 feet above yard level. The chimney flue is enclosed in this foundation above yard level so as to guard against any flooded conditions. There is a spacious platform at the top of the stoves. This is connected to the furnace top by means of a bridge. A 1-ton, electrically-operated elevator provides convenient means for the workmen to reach the top of stoves and furnace and make inspections. A stairway around the elevator shaft can be used in case of accident to the elevator.

Hoisting Equipment

The hoist house is located between the skip bridge and cast house. It is 26 feet wide and 40 feet long and is roofed with ¼-inch steel plates, the underside of which are ceiled with tongue and groove-wood sheathing. The building houses a double-drum skip hoist built by the Otis Elevator Co. It is driven by a 200-horse-



VALVE FOR SHUTTING OFF THE GAS FROM STOVES AND BOILERS

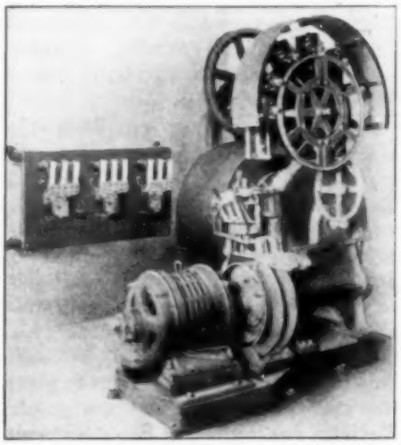
power, 220-volt, direct-current motor. The hoist engine is started by an operator, and automatically accelerates, slows down and stops. The revolving top is automatically controlled from the skip motor. Blast is furnished by two Ingersoll-Rand turbo blowers. Each blower has a capacity of 50,000 cubic feet per minute and is equipped with barometric condensers, vacuum and circulating pumps. The turbo blowers are so balanced that they are not bolted to the foundation and show no perceptible vibration when running at 3000 revolutions per minute. These two machines, together with an old Tod engine, form the blowing equipment for both Grace furnace and the new stack.

A novel hood, surrounded by heavy copper screen and placed on air intake pipe above the engine house roof, tends to keep foreign matter out of the air intake. It was designed to cut down the velocity head of the incoming air. It is readily reached from the ground by a safety ladder. A heavy waterproof concrete tunnel connects the pump house on the river bank with the basement of blowing engine house. Through it are run water supply pipes, circulating water lines to condensers, steam lines to circulating pumps, and exhaust steam lines returning to the feed water heater. This tunnel also serves as a subway for use of employes.

The old boiler plant was dismantled and a new one erected. It consists of seven 700-horsepower Stirling boilers which supply steam at 200 pounds pressure and 100 degrees superheat. The loop system of steam and feed water piping is used, so that no ordinary accident can put more than two boilers out of commission at one time. All the steam generating plants of the works are interconnected which results in a great saving of fuel. These boilers are fired entirely by blast furnace gas through burners of special design, which give practically perfect combustion and are equipped with recording instruments so that a record of the efficiency of each boiler is available at all times. This is a subject to which the company has given special attention for several years. The boilers are built singly and are equipped with individual stacks 200 feet high. Water for the boilers is pumped from the condenser hotwells into a purifying plant where it is treated chemically and filtered. It is then pumped to a 15,000-horsepower feed water heater where the temperature is increased to 210 degrees. Two centrifugal pumps in which the pressure is automatically controlled supply it to the boilers.

A large receiving yard has been built to take the incoming train of ore. The ore then is switched by the company's own locomotives to a movable car dumper built by the Wellman-Seaver-Morgan Co., which turns the car upside down and dumps the ore directly into the ore yard. The car dumper has a capacity of 30 cars per hour. The ore yard is 200 feet wide and has a capacity of over 1,000,000 tons, which may, in the future, be doubled. The sides of the yard are built of massive concrete walls 30 feet high, on top of which travels a Hoover & Mason ore bridge. The latter is equipped with a 15-ton grab bucket, which deposits ore into a 100-ton bin built on one end of the bridge. The bridge trucks are anchored by ropes run from drums and fastened to the ends of the concrete wall. This keeps the bridge from running away during high-wind storms. From the 100-ton bin at the end of the bridge, the ore is dis-

charged through electrically-operated gates into either of two 60-ton transfer cars. The latter are motor-driven, and are equipped with air brakes and side discharge doors operated by air. The transfer cars travel on standard gage track and serve all three furnaces. The bin system of the new furnace consists of 10 double-compartment, structural steel, Hoover & Mason bins. Each compartment is fitted at the bottom with two roller gates for discharging the stock mechanically into either of two larry cars, which operate on a standard gage track underneath the bins. These larry cars are electrically driven and are equipped with air brakes and air dump for discharging the ore into either of the skip cars. The skip pit is built of heavy waterproof concrete with reinforced concrete platforms around the cars, and concrete stairways, thus affording easy means of cleaning the pit. In laying out and building the new furnace the possibility of future extensions has been kept constantly in mind.



PANEL ELEVATOR CONTROL

New Control for Elevators

An elevator control for freight and passenger service to be used with squirrel cage motors in sizes up to and including 20 horsepower at car-speeds not exceeding 150 feet per minute has been brought out by the Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa. The equipment consists of a small control panel mounted on the wall near the motor; a car switch, by means of which the operator controls the movement of the elevator cars; and such elevator safety devices as may be desired. A line contactor and two mechanically interlocked directional contactors are mounted on a black marine-finished slate base. The motor which is started with full line voltage, requires no secondary or accelerating contactors.

The same contacts may be used for alternating-current and direct-current controllers for both car-switch and push-button operation. The car switch closes the line contactor and one of the directional contactors, and thus starts the car in the desired direction. Brake magnets are recommended for use with this equipment.

A slate panel is furnished with a pipe frame for floor mounting. It carries a main-line contactor, two mechanically interlocked directional contactors, and an accelerating contactor. The latter is controlled by a large air dash-pot for cutting out the starting resistance and series field. The resistors are mounted on the rear of the panel. The control apparatus can be mounted near the elevator motor. All parts are easily accessible for inspection at any time. Provision is made on the directional and line contactors for a shunt-brake circuit, which, when the control circuit is completed, energizes the brake magnet and releases the brake. A one-point car switch mounted in the elevator car furnishes the means by which the operator controls the movement of the car.

Safety devices may be connected in the control circuit so that the opening of any switch will bring the car to rest. Those most commonly used are the emergency switches, machine-limit and hatchway-limit switches, which operate automatically to prevent accidents from over-travel, should the operator for any reason fail to release the car switch; and door switches, which prevent the starting of the car until the door is properly closed.

Lake Yard Expands

The Manitowoc Shipbuilding Co., Manitowoc, Wis., is undertaking extensive enlargements of its plant and yards to provide more adequate facilities for handling work already in hand and a new contract just awarded by the government, calling for 24 additional vessels. This company has acquired the entire land holdings of the Burger Boat Co., Manitowoc, which will provide 750 feet additional dockage. The Burger Co. in turn, has acquired a 5½-acre site on the west side of the Manitowoc river, upon which it will re-establish its plant and yards. The new establishment will be considerably larger than the old, the expansion being necessary because of contracts now in hand, valued in excess of $1,000,000.

Benzol Contracts

For Delivery After Jan. 1 Being Accepted—Allowing Phenol

New York, Sept. 21.—Supplies of benzol are beginning to move a little more freely to consumers and the producers are now accepting contracts for delivery after Jan. 1. However, business taken for next year, it is specified, must be shipped at prices then prevailing. The market for delivery the last four months of this year continues 22 to 24 cents per gallon at producers plants according to quantity.

Indications are that the war trade board now is more inclined to grant licenses for exports of phenol and fairly heavy shipments aboard, largely to the Far East, are expected. Stocks of phenol are accummulating less rapidly. Prices are unchanged at 42 to 46 cents per pound at producers' plants.

The recent fire at the works of the Barrett Co., Frankford, Pa., affected only that section of the plant devoted to naphthalin. Most of the stocks of this material were saved and the company expects to resume operations to about half capacity within two weeks. Thus, it is expected, that consumers of naphthalin will not experience much interference with deliveries. Other products are not effected by the fire.

Supplies of sulphate of ammonia continue short and only odd lots of material are available over and above the government's requirements for fertilizer manufacturers and other users. Prices are unchanged at $4.50 to $4.75 per 100 pounds at producers' plants.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) (drums)	1.55
Toluol (for government)	1.50
Solvent naphtha	.20 to .25
Per Pound at Producers Plant	
Phenol	$0.42 to .46
Naphthalin (nominal)	.09 to .095
Per 100 Pounds at Seaboard	
Sulphate of ammonia (to fertiliser trade)	$4.50 to 4.75
Contract	
Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Co-operation Gear Men's Keynote

Semi-Annual Meeting of Their Association at Syracuse Notable for Its Spirit of Helpfulness and Purpose to Give Full Aid to Government—Steel, Coal, Standardization and Labor Problems Discussed

NOTABLE for its spirit of co-operation and good-fellowship, the semi-annual meeting of the American Gear Manufacturers' association at the Onondago, Syracuse, N. Y., Sept. 19 to 21, was one of the most successful sessions of this young but vigorous organization. Business competition was put out of mind; the dominant thought of those in attendance was the advancement of the common cause and how to combine the multiplicity of interests to serve the government. Problems such as the procurement of steel, coal, transportation and labor were discussed in a practical manner by a number of speakers, among whom were Charles A. Otis, chief of the resources and conversion section of the war industries board, who graphically portrayed the situation at Washington in its relation to the manufacturing interests of the country, and C. E. Stuart, secretary and treasurer of the Central Steel Co., Massillon, O., who spoke on the outlook for the steel supply. It was a typical war-time session of an organization comprising 92 members, representing 46 firms, and of whose membership all with but three or four exceptions are self-made men, men who have come up from the ranks, and have approximately $85,000,000 of property now in their keeping. While the association was organized in March, 1917, it now includes a majority of the representative gear manufacturers of the country and new members are constantly being added, seven being admitted to membership at the meeting in Syracuse and others signifying their purpose to join. For this encouraging progress, the association acknowledged much credit was due to the president, F. W. Sinram, Van Dorn & Dutton Co., Cleveland; to the secretary, F. D. Hamlin, Earle Gear & Machine Co., Philadelphia, and to other officers.

"Carry On," Mr. Sinram's Subject

The forenoon of the opening day was devoted to miscellaneous committee meetings. The first session of the association began Thursday afternoon with an address "Carry On" by Mr. Sinram in which he emphasized the point that the requirements of the nation are paramount to every other consideration. He said, in part:

It devolves upon every gear producer to apply his plant and equipment where it will fit into the general requirements to the best advantage. Production is the need of the hour. Co-operation, as never before, between those operating in the same field is demanded. This has become a patriotic duty and is not only encouraged, but expected by the government.

We live in a new era. Standardization is not only encouraged and recommended by the government but it has seen fit to command it in certain industries in the interest of conservation, production and economy. Our program for technical standardization is gradually taking shape. Let all concerned keep ever at it in order that the current association year may record material progress. Standardization is important to the future of the industry.

Another phase of standardization, commercial, is receiving consideration; uniformity of practice is desirable in many connections.

Following Mr. Sinram's address committee reports were received. The vice chairman of the committee on membership, John Christensen, Cincinnati Gear Co., Cincinnati, reporting good progress. The chairman of the committee, George L. Markland, Philadelphia Gear Works, Philadelphia, was unable to attend the meeting because of illness.

In submitting the report of the general standardization committee, the chairman, B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I., said letters had been sent to subcommittees, outlining a method of procedure but that only one subcommittee had responded, suggesting a different program for its work. Little could be accomplished, he said, until the subcommittees had given the matter attention and the results "boiled down." H. E. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J., vice president of the association, commented on the importance of the work, while C. E. Crofoot, Crofoot Gear Works, Inc., Boston, urged members to give the committee more support. The need

MEMBERS OF AMERICAN GEAR MANUFACTURERS' ASSOCIATION AND FRIENDS AT SEMI-ANNUAL MEETING HELD IN SYRACUSE, N. Y., SEPT. 19-21.

for promptness in replying to all communications was emphasized by Secretary Hamlin. J. H. Dunn, R. D. Nuttall Co., Pittsburgh, chairman of the committee on uniform cost accounting read a report in which he said: "Probably the most thorough effort to standardize accounts has been made in the electrical industry. The problems encountered there were identical with our own. The system it adopted has had federal approval and it may be that we cannot arrive at results in shorter time than by approving the same system."

Mr. Hamlin's suggestion that the committee be enlarged from three to five members to give the subject further sonsideration was approved.

War Service Committee Named

The president announced that at a recent meeting of the executive committee in Buffalo a war service committee was appointed to co-operate with the government, at the request of the chamber of commerce of the United States. This committee is representative of the entire industry, membership not being limited to the association. It includes: Mr. Sinram; S. L. Nicholson, assistant to the vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh; Frank Burgess, president, Boston Gear Works, Boston; H. W. Chapin, treasurer, Brown-Lipe-Chapin Co., Syracuse, N. Y.; J. E. Gleason, president, Gleason Works, Rochester, N. Y.; F. T. Zollinger, manager, worm gear division, Timken-Detroit Axle Co., Detroit; Mr. Hamlin, T. G. Meacham, New Process Gear Corp., Syracuse, N. Y.; E. J. Frost, president, Frost Gear & Forge Co., Jackson, Mich.; William Ganschow, William Ganschow Co., Chicago and Mr. Jones, Falk Co., Milwaukee. The committee selected Mr. Sinram as its chairman.

The secretary of the association reported that he had written to the war industries board requesting that it postponed consideration of the metric system until 1925. J. B. Foote, Foote Bros., Gear & Machinery Co., Chicago, chairman of the committee on labor, then read a detailed report on labor conditions. Members of the association were the guests of the Brown-Lipe-Chapin Co., and the Brown-Lipe Gear Co., Syracuse, N. Y., at dinner Thursday evening in the ballroom of the Onondago.

Beginning the session Friday morning with an address on "What is the Possibility of Women Becoming a Permanent Factor in the Gear Industry," W. H. Diefendorf, New Process Gear Corp., Syracuse, said: As long as there remains a demand for operatives at good wages we may expect to see woman a keen competitor of man, and, in certain lines, running at the forefront of the race, resulting in a condition, which, if continued, will undoubtedly force upon the community the consideration of such things as the communal home, the communal kitchen, etc. To my mind there can be but one reply to the question in hand, which is that the up-to-date gear maker not only can but should accord to woman a place among his operatives.

In his address on manufacturing resources and their conversion to war industries, Mr. Otis told the members that the program entrusted to his section of the war industries board is working out satisfactorily. He said:

As a suggestion, will it not be wise to establish a committee of practical mechanical men in every town that has enough industry to warrant, and let it be prepared to survey and recommend to the factories what they can do in combination? There are many instances where a larger concern has been greatly assisted by suggestions from a smaller one, even to the extent of practically absorbing the smaller organization as a whole and keeping it intact for after war work. The larger institutions of the country are now being urged to do all they can along this line, and it is hoped beneficial results will be noticeable.

At the conclusion of Mr. Otis' address, H. E. Eberhardt, referring to the shortage of fuel raised the question as to whether "gasless" Sundays are having the desired effect. He said he had just returned from Bridgeport and New Haven, Conn., where manufacturers had reported a loss of at least 15 per cent in efficiency in their shops because of the order prohibiting the use of gasoline on Sunday. He explained that many mechanics, receiving high wages, own automobiles and while they formerly took their outings on Sunday they now take another day.

Members of the association took luncheon at the plant of the New Process Gear Corp., Friday, later inspecting this plant and also those of the Brown-Lipe-Chapin Co., and the Brown-Lipe Gear Co. An informal banquet was held in the evening.

Mr. Stuart's address on the outlook for the steel supply was a feature of the session Saturday morning.

He said it would be necessary to eliminate every class of nonessential production if the government plans are to be carried out. He emphasized the need of preventing waste. While 23,000,000 tons of steel will be required for the fulfillment of the government's plans for the last half of 1918 the output under the present conditions will not exceed 17,000,000 tons. One reason assigned for this shortage is the great shortage in coal. He urged members to do their utmost to help the government solve the transportation problem as an aid to increasing the supply of coal.

Mr. Crofoot read a paper on trade acceptances and its relation to credit conditions today. "The time has come to make the use of trade acceptance a national business custom," he declared.

Those Who Attended

Those who attended the meeting beside those whose names have already been mentioned were: J. C. O'Brien, Pittsburgh Gear Works, Pittsburgh; S. A. Smith, Meisel Press Mfg. Co., Boston; R. C. Ball, Philadelphia Gear Works, Philadelphia; Frank Horsburgh, Horsburgh & Scott Co., Cleveland; Robert J. Coulter, Philadelphia Gear Works, Philadelphia; Frank E. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J.; Frank H. Rea, Pittsburgh Gear & Machine Co., Pittsburgh; L. G. Nilson, Nilson-Miller Co., Hoboken, N. J.; L. C. Buehler, Indianapolis Tool & Mfg. Co., Indianapolis; S. O. White, Warner Gear Co., Muncie, Ind.; W. G. Jones and Leslie C. Meyer, W. A. Jones Foundry & Machinery Co., Chicago; Biddle Arthurs, Simonds Mfg. Co., Pittsburgh; E. J. Causer, R. D. Nuttall Co., Pittsburgh; F. G. Eppley, Albaugh-Dover Co., Chicago; A. C. Gleason, Gleason Works, Rochester; S. J. Sorensen, Cincinnati Gear Works, Cincinnati; Victor S. Beam, Westinghouse Electric & Mfg. Co., New York; N. E. Zusi, Meisselbach-Catucci Mfg. Co., Newark, N. J.; W. H. Phillips, R. D. Nuttall Co., Pittsburgh; E. E. Sawtelle, Tool Steel Gear & Pinion Co., Cincinnati; C. F. Goedke, William Ganschow Co., Chicago; Ralph L. Dodge, New Process Gear Corp., Syracuse, N. Y.; A. F. Cooke, Fawcus Mfg. Co., Pittsburgh; R. E. Talley and J. G. Miles, Westinghouse Electric & Mfg. Co., East Pittsburgh; F. Novotny, Albaugh-Dover Co., Chicago; J. C. Horne, Union Gear & Machine Co., Boston; Robert Wilde, Michigan Gear & Engine Co., Detroit; H. C. Woodsum, Crofoot Gear Works, Inc., Boston; Sam Cooke, Brown-Lipe-Chapin Co. New members admitted to the association are A. T. Brown, Brown-Lipe Gear Co.; C. H. Logue and T. U. Dunning, Brown-Lipe-Chapin Co.; F. W. England, Illinois Tool Works, Chicago; Otto Cullman, Cullman Wheel Co., Chicago; A. E. Parsons, Brown-Lipe Gear Co. and L. C. Buehler, Indianapolis Tool & Mfg. Co., Indianapolis.

Safety Council Wins New Fields

National Organization Increases Number of Divisions to Meet Growing Interest in Work—Annual Meeting at St. Louis Stimulates Wealth of Practical Suggestions for Greater Industrial Safety

SAFETY all the time, in thought, action, precept, safety to the other fellow as well as to one's self, safety as an economy, safety as a patriotic measure to conserve manpower—safety.

For a week in St. Louis the best minds engaged in preaching and practicing safety have been in conference, teaching and learning, exchanging ideas and arguing as to best methods. It has been a symposium too broad for any one man to comprehend it all. Some sessions have been general in their nature, dealing with fundamentals, where all might be interested. These meetings over, the gathering split up into a number of divisions to consider the special hazards of various industries. Railroads, iron and steel plants, foundries, contractors, textiles, papermakers, mines, chemical manufacturers, all subject to hazards, but each having different problems to meet and needing different means to meet them, held their separate sessions and conferences.

A new section got well under way this year after efforts for two or three years to organize it. This is composed of contractors and builders. The attendance was unexpectedly large and some real problems were brought up which resulted in means being devised or existing means being made known more widely, to promote safety among workmen engaged in construction work. A number of shipbuilders were present and naturally flocked with the contractors, whose line of work is somewhat similar in many respects. A movement started spontaneously for the formation of a shipbuilding section as this industry is becoming more and more important in this country. After some discussion, it was deemed best to have the shipbuilders remain in the contracting section for the present and take up the matter of a separate section later.

Constant broadening of the National Safety Council's work is thus illustrated. One new section suggests another and this is the secret of the great success of the movement that has led to great saving of limb and life in industry and seems destined to relegate to the limbo of things forgotten much of what formerly was regarded as an unescapable result of work in industry.

UNDER the metals section the first session was devoted to foundry problems. G. A. Hart, superintendent of the National Malleable Castings Co., Melrose Park, Ill., spoke on foundry management from the standpoint of accident prevention. The organization in his plant started with the appointment of a safety engineer and then committees of employes to consider hazards and make suggestions as to means for preventing injuries. The executive committee has power to act and to order changes made. Problems needing special engineering study are referred to the safety engineer. A point is made that any valuable suggestion is acted on promptly and changes made at once as it is recognized that any good device cannot be employed too early. As a result of this method of acting on suggestions by workers some new methods of practice have been developed which have aided much in manufacture and have caused economies.

Lunchrooms as a means to bettering the mental and physical conditions of workers were analyzed by H. H. Haylett, employment and welfare manager of the Benjamin Electric Mfg. Co., Chicago. He formerly was in charge of the lunchrooms and commissaries of the Commonwealth Steel Co., St. Louis, and gave the experience of that concern. An outline of the plan found successful there is as follows:

Our company felt that there was a large value in wholesome food for the workmen, that many workmen left their homes in the morning with an improper dinner in their pails—either because the wife was sick or some other adverse condition had prevailed. Often the need for economy prevented getting the proper food. Often, too, the nearby saloon offered a substitute with liquor and free lunch for a proper meal. We also felt that there would be considerable value in removing our men from the association of their work for half an hour together at noontime, where sociability and goodfellowship should take the place of shop etiquette and where the men would be taken away from the environment of work and thrown into another sphere, which of itself would be recreational in its influence on them, for even when food is nourishing and readily digestible, it happens frequently that it has to be eaten under conditions which militate against its real value. A meal taken amid dust and dirt in the close atmosphere of a shop which has been occupied for some hours by a body of toiling workmen gives little stimulation for healthy digestion.

We therefore decided to abolish the small, poorly-equipped leanto where an outsider had been serving lunches to our workmen and took the following fundamentals as our guide for the new works restaurant.

CONVENIENT LOCATION—The restaurant must be convenient for the workmen.

ATTRACTIVENESS—It must be attractive, light, airy, well ventilated and spaced and with plain but neat, clean and attractively substantial equipment.

PROMPT SERVICE—Service must be prompt and adequate, for slow service is certain to make the works restaurant a failure.

HOURS—The restaurant should be open at all hours when there are night shifts.

Safety Meeting Lowers Accident Record

THOUGHT waves from a mass of people all thinking the same thing appear to have their effect. In honor of the National Safety Congress meeting in St. Louis, Sept. 16-20, a Safety Week was decreed by the city. Signs and badges blazened forth the fact that everybody was making the city a safe place.

The result—

The coroner is a good source of information.. In four days last year corresponding to the early part of Safety Week the coroner had 20 fatal accidents. This year not a fatality occurred from accidental causes in the week.

Coffee, tea, cocoa and milk, with rolls, sandwiches, pie and the like should be obtainable at any time.

FOOD—The food served should be of first class quality, fresh, properly prepared and cooked, appetizing and of sufficient variety.

PRICES—The price of the food to the workmen should be so low as merely to cover cost, or at most, to provide only a small margin above cost. The price of any given meal or article of food should be displayed prominently. This is essential for prompt and satisfactory service.

PAYMENT FOR FOOD—Method of payment should be by placing a check on the tray before the workman eats and his payment of cash, or coupon to the cashier on his exit. Tickets purchased in advance save the carrying of loose change in work clothes.

MANAGEMENT—First and last the success or failure of the works restaurant depends upon its manager.

Attacking much the same general subject from another angle, H. L. Krum, works director of claims and safety of the International Harvester Co., Chicago, described the necessity for wash and locker rooms and gave valuable suggestions as to the form found efficient by his company.

Effect of Cleanliness

As a hot lunch of wholesome food, well cooked and served, makes better workers, so this observer is of the opinion that a workman who can wash himself and change to clean clothes as he starts for home will be a better citizen and will have a higher self-respect. The general public will also have a better opinion of the plant if its workers come forth looking clean and well dressed. Young men will be more likely to seek employment at a place where he will not be forced to go to his home covered with grime and in dirty clothing. Mr. Krum called attention to the fact that if a workman presented himself at the employment office seeking a place, in the clothes worn by some men leaving the same plant, and with his face and hands as dirty, he would not be considered for the place.

The public also has a right to demand that workers with whom they come in contact on the streets and in public conveyances have opportunity to remove the soil of their occupations inside the plant rather than on the seats of street cars and the garments of those whom they touch.

Interesting specifications as to location, arrangement and equipment of locker and washrooms, showers and the like were given, as worked out by the International Harvester Co.

Eye protection is a matter of great importance to the iron and steel industry, in the foundry and mill. It has been a difficult matter to handle from the standpoint of proper glass and from the resistance of most workmen to wearing goggles while at work. Buell W. Nutt of the Strong, Kennard & Nutt Co., Cleveland, presented some interesting facts in connection with this subject. Formerly most of the glass used in workmen's goggles was simply window glass, breaking easily and sometimes adding to the injury by the fragments entering the eye. Plate glass then was tried, and being heavier, resisted better, but fragments still were prone to scatter. Special optical glass, made in a different way and not so likely to break into small particles then was imported from Europe and served fairly well. With the disarrangement of conditions on account of the war, this source was cut off and American glassmakers took up the matter, though previously efforts to make optical glass in this country had not been successful. Recently in this country a glass for goggles has been developed, consisting of two films of glass with a thickness of transparent celluloid between, the three cemented into one piece. The celluloid prevents the glass shattering. This now is being used by the government in gas masks and goggles.

Another glass has been developed to protect the eyes from the injurious rays at the ends of the spectrum, the infrared and the ultraviolet. These rays are met in many metallurgical progresses and are highly injurious to eyes. A glass colored to intercept one set of rays is coated with an attenuated coat of metallic gold to intercept the other injurious rays, while the combination allows the free passage of the rays at the middle of the spectrum, which are necessary to vision.

Difficulties in persuading workmen to wear goggles are hard to overcome. Mr. Nutt divides the effort into two parts. First, the workmen must be convinced of the serious effects of eye accidents and the gravity of losing one or both eyes. With this fully appreciated, the effort is to convince the worker that unless he wears goggles at work which requires them he, personally, probably will suffer an eye injury. The latter argument must be made strenuously as many men recognize dangers as applicable to the other fellow but seem incapable of applying the probability to themselves.

Importance of Right Shoes

Shoes are an important subject as related to workers about hot metals as burns of the foot may be serious if the shoes allow the metal to come into contact with the flesh, and particularly if the metal enters the top of the shoe and lodges between leather and flesh. B. C. Christy, safety inspector for the International Harvester Co., Chicago, discussed shoes, giving the results of experiments in his company's plants. The shoe must be well fitted, of good material to resist hard wear, and should be fitted for the work. The common practice of workers wearing their old street shoes in the shop is discouraged as such shoes are too light to bear the knocks of a mill or foundry and soon break. The lace shoe of blucher cut, with a heavy tongue is considered best. The congress gaiter with rubber gores is frowned on. The rubber soon loses its life and the top of the shoe then stands away from the ankle and forms a pocket to catch spills or splashes of metal, causing deep burns. Care of hose and careful lacing of shoes to assure absence of wrinkles to irritate the skin was insisted on.

What the United States government is doing for safety in an engineering way was described by Chester E. Rausch, assistant director of the American Museum of Safety, New York. He called attention to the fact that most navy yards in peace times are manned by a small force, that the work is leisurely done and usually there is not much hazard as discipline is strict and rules rigid, leaving small margin for accident. With the coming of war, however, these conditions changed at once and workmen were multiplied. Instead of being trained in naval and army traditions they were civilians, with the habits of their previous work. Slow

Officers of National Safety Council

President — DAVID VANSCHAACK, Aetna Life Insurance Co.

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Field secretary — C. W. PRICE, Chicago.

Manager accident department — SIDNEY W. WILLIAMS, Chicago.

Assistant secretary—J. J. LAMONT.

Officers Metals Section

Chairman—F. E. MORSE, American Rolling Mill Co., Middletown, O.

Vice chairman — HOMER WEEKS, American Steel & Wire Co., Pittsburgh.

Secretary—W. E. WATERS, National Malleable Castings Co., Chicago.

work gave place to speed. In these factors the hazards increased rapidly and effective means were needed to meet the new conditions. The same has applied to the ordnance plants of the government.

To meet these conditions a survey has been made of the entire situation and uniform efforts have been made to apply remedies. Red tape and precedent have been encountered but in spite of inertia progress has been made. A result is seen in the direct drop in the accident rate. The government gave wide latitude to the safety department and is reaping the reward. In early contracts, some of which are not yet completed, no provisions were made for safety measures, but in all the later contracts these are being stipulated.

Railroads In Industrial Plants

Apparently there has been a long-standing difference of opinion between railroad men and steel mill men over the measures for safety in connection with railroad lines inside mill yards on which switching is done by railroad crews. This appeared above the surface at the sessions of the iron and steel section and speakers expressed themselves as gratified that at last the two sides were getting on common ground where the matter could be discussed and reforms instituted. Some of the difficulties which came up were placing building too close to the tracks, piling material too close to cars, using tracks as highways, dropping material between rails, plant gates at track entrances out of repair so they would swing shut in front of an emerging train and many others. One speaker said he had found the attitude of some mill men, when remonstrated with, summed up in the reply: "Our men are not being injured." This was denominated as "a purely cold-blooded attitude."

C. H. Baltzell, superintendent of the St. Louis & San Francisco railroad, Fort Smith, Ark., presented a paper on plant railroad hazards, in which he presented the difficulties from the point of view of the railroad man. He asked for teamwork between railroads and industrial plants to reduce hazards and injuries. He suggested that two classes of hazards exist. One is the hazard to the employe of the plant who uses the tracks as a highway, who crawls under or over cars to gain a little time when a train blocks the way, who rides on cars or engines to be carried a short distance, and who even sits under a car to keep out of the sun. To the railroad man, the hazard comes from hand switching that leaves cars too close to frogs or leaves switches set in the wrong direction. His conclusion is:

But, after all, it is teamwork that wins, together with a sincere and earnest desire to reduce personal injuries by taking an interest in your brother worker, causing him to think and act in a safe and sane manner; showing a brotherly feeling of interest for his welfare and thereby greatly assisting in bringing about that sincere feeling of friendship that should prevail through the world today.

The railroad administration is making a strong crusade in the interest of safety. It is a step in the right direction, toward a systematic method of conserving our man power. When we read of the terrific losses on the western front it should strengthen our determination to do our part in assisting to stop the unnecessary loss "over here." Every man and woman has a distinct service to perform and we must absolutely put forth every effort in an educational manner in order to secure earnest and sincere interest in the great work of thinking and practicing safety in our railroad work. In carrying out this thought and working constantly in that direction, there will be greater conservation of life and limb, and at this time, when every ounce of man power should be used effectively "over here" and "over there," we will be doing out part to help win the war and to assist our boys at the front by backing them up to the limit of our ability.

A direct relation between labor turnover and industrial accidents is traceable, according to A. H. Young, manager of industrial relations of the International Harvester Co., Chicago. He finds from such statistics as are available that accidents to men employed six months or less in a plant are four times as numerous as the general average. Accidents to men employed a year or less are three times as numerous as the average.

In discussing this phase J. M. Eaton, assistant to the president of the Lincoln Motors Co., Detroit, stated that his company had taken into service in the past 10 months about 700 women, none of whom had been employed in machine shops before. They are employed at all sorts of machine tools. Believing that early instruction prevents accidents, the company puts the women through a two-week course of instruction in how to perform their tasks the right way and the safe way. The result is that until a week ago not an injury had happened to a woman in the plant.

Speaking on how to organize for safety, F. E. Morris, safety engineer of the American Rolling Mill Co., Middletown, O., denominated safety the antidote for carelessness, which is the lack of forethought.

Educational methods were reviewed by F. H. Elam, manager of the casualty department of the American Steel Foundries, Chicago.

Discipline and Safety

Much discussion of a practical nature followed the reading of a paper dealing with disciplining in relation to safety, by Grover G. Kingsley, safety engineer for the Halcomb Steel Co., Syracuse, N. Y.

It was suggested in the discussion that the present labor situation is such that many things must be winked at which ordinarily would call for discipline and only the aggravated cases should be pushed, as all the men possible are needed for production. The danger was pointed out of allowing discipline to be placed in the hands of foremen as they might use this power for personal grudges. All cases of discipline should be passed on by shop committees and passed up to the higher committees for approval.

The paper prepared by Maj. K. M. Burr, safety inspector for the Illinois Steel Co. at the Gary works was read in his absence, as he was kept at home by a broken arm sustained at his home in a fall. The Gary works in 1917 made the best record for safety up to that time but the eight months of 1918 already past show a decrease of 13 per cent in accidents, compared with the corresponding period in 1917.

Safety Expert Breaks Arm Before Meeting

THERE seems to be much psychology in safety.

For instance—

Maj. K. M. Burr, safety inspector for the Illinois Steel Co., at the Gary, Ind., works, is one of the most experienced and efficient men in his line. His record shows that the Gary plant observes safety to a point where accidents are constantly reduced.

Yet it would appear that his safety ideas do not reach to his own home. He was to have read a paper at the meeting of the National Safety Council at St. Louis and his railroad ticket was being delivered to him at his home in Gary.

He was entertaining for a member of the staff who was about to go away into military service. He answered the doorbell rung by the messenger with the ticket and tripped on the stair. His arm was broken close to the shoulder, a severe break with the bone badly splintered.

Labor Board Upholds 8-Hour Day

Approves Decision of Its Umpire in Wheeling, Case in Which Employer Must Prove Emergency Exists Before Extending Hours, and Then Pay Time and One-half for Overtime—Important Precedent Set

THE eight-hour day, except in emergency, has been upheld by the war labor board in its first decision involving the practical application of this policy. In announcing the decision, ex-President William H. Taft and Frank P. Walsh, joint chairman of the board, said they had approved the award of their umpire, Supreme Court Justice Walter Clark of North Carolina, in a dispute of the Wheeling Mold & Foundry Co., Wheeling, W. Va., with its employes. In accordance with this award, the question of emergency must be decided by an affirmative vote of three out of four members of a committee in which employer and employes have equal representation, the burden of proof thus being placed on the employer. The award provides for time and one-half for all time over eight hours and double time for work on Sundays and holidays.

The decision which is considered of immense importance to the country's industries was interpreted by Mr. Walsh "as the first great step in the application in fact of the national policy to indusry in general." He said it would serve as a precedent in the adjudication of future controversies.

Justice Clark in his award says:

There is a vast body of experience that a 10-hour day shortens the lives of the employes, injures their health, and that in point of production there is an increase by the substitution of eight hours for a longer period. Even if this were not true as to one day, the accumulated fatigue of working more than eight hours for a series of days reduces the production below the quantity produced by strict adherence to that limit. Especially is this so as to the solderer's occupation, the life of whom, working at nine or ten hours per day, subject to the heat and noxious fumes, is said to average not more than 14 years. In work of this kind there can be no doubt that greater production will be had by the working of an 8-hour day than by working nine or ten hours.

Praises Employers

The umpire states that the fact that a majority of plants in Wheeling are working on a 9-hour schedule is no reason why conditions should not be improved. He points out that nearly 500,000 railroad men, and thousands of others employed in coal mining, the packing industry, coal mining industry, garment industry and in government construction work are now working on the basis of the 8-hour day. Continuing he says:

The employers have, as a rule, patriotically given full aid to the prosecution of the war by placing their splendid plants and their highly skilled chiefs at the service of the government. The employes have also, as a rule, with the same patriotism yielded the 8-hour limitation wherever it has been necessary to speed up production for the government. The former have received great increase in profit. The latter has contributed an increase in the hours of labor, and vast number of men to fill our armies. The former have received from the government; the latter have given to it. They should not be asked to do so, beyond the necessity of the occasion.

Text of Award

The text of that part of Justice Clark's award relating specifically to the Wheeling dispute follows:

The molders employed by the Wheeling Mold & Foundry Co., at Wheeling, W. Va., shall not be required or permitted to work more than eight hours within any day of 24 hours, except in cases of emergency, and then under the following terms and conditions:

1. Overtime work shall be paid for at the rate of time and one-half for all hours worked in excess of eight hours, with double time for Sundays and holidays.

2. The question whether or not an emergency exists, together with the length of time over which such emergency may extend, and the number of extra hours per day, shall be determined by agreement between the management and the working molders in the shop.

3. For the purpose of effectuating the agreement mentioned in paragraph 2, a permanent committee of four persons is hereby created, two of whom shall be designated by the management of the plant and two by the working molders in the shop, the assent of at least three of whom shall be necessary for permission to work more than eight hours in any day of 24 hours.

Explaining the second paragraph in the award, Justice Clark says:

While an 8-hour day is stipulated, emergencies are likely to occur when for a brief period that limit may be exceeded. But the protection of the 8-hour day will amount to nothing if it rests with the employer alone to declare the emergency. The 50 per cent allowed for overtime is too small a penalty in view of great profits that may arise. Such emergencies can ordinarily be met by the adoption of the 3-shift system or an increase in machinery. It is better that the machinery should be worn out than the bodies of the employes. Man passes through this world but once, and he is entitled, in the language of the great Declaration, to some "enjoyment of life, liberty, and the pursuit of happiness."

Puddlers' Wages Advanced

At the recent bimonthly settlement, held in Youngstown, puddlers' wages were advanced another 25 cents. The rate to be paid in September and October to puddlers affiliated with the Amalgamated Association of Iron, Steel and Tin Workers is $16.55, with a card rate of $3.40 for the Western Bar Iron association. This was an advance of five cents over the price which prevailed in the two previous months. This $16.55 rate is the highest ever paid and the bar iron price is brought five cents nearer the government maximum price of $3.50.

The comparative bimonthly bar iron average price per pound since January, 1917, and the resultant puddling rate are as follows:

	1917.		1918.	
Jan.-Feb.	2.35c	$11.30	3.10c	$15.05
Mar.-Apr.	2.45c	11.80	3.30c	16.05
May-June	2.65c	12.80	3.35c	16.30
July-Aug.	2.75c	13.30	3.45c	16.55
Sept.-Oct.	2.85c	13.80	.....	.....
Nov.-Dec.	2.95c	14.30	.....	.....

Wage Rate Is Unchanged

No explanation is forthcoming as to why the average sales price of Nos. 26, 27 and 28 gage black sheets, on which the wages of workmen affiliated with the Amalgamated Association of Iron, Steel and Tin Workers are based, should continue substantially above the government price although nearly a year has elapsed since the federal price was fixed. The government price on these three gages is about $4.95 per 100 pounds, but examination at Warren, O., recently of manufacturers' sales sheets for July and August, disclosed an average price of $5.15, the same as for the previous two months, and 5 cents higher than four months ago. As a result of this maintained sheet price, wages of sheet mill men are not reduced.

Priority in War Industry

Fourth Installment

Purpose and Preference

How Lists Differ — What is Their Weight

Relation to Priority System Explained

BY C. J. STARK

Editor, The Iron Trade Review

UNDER date of June 6, the priorities board announced what is known as the general purposes list. This list set forth a certain number of general lines of purpose against which the producer on his own initiative, could ship after he had honored all the priority certificates that had been served upon him; or could ship at any time if the required delivery of the orders on his books covered by priority certificates would not be interfered with. According to the priorities board, the function of the general purposes list is "the guidance of all governmental agencies in the production, supply and distribution of all materials, finished products, electrical energy, fuel and transportation by rail, water, pipe lines, and otherwise.". The iron and steel industry under the announcement of June 6, 1918, agreed with the government that after filling orders covered by priority certificates it would make no shipments unless these orders were embraced within the general purposes list or unless they had been placed by industries and plants within a revised preference list to be put forth by the priorities board.

The general purposes list is given below:

Including all necessary raw materials, partially manufactured parts and supplies for completion of products.

SHIPS

Including destroyers and submarine chasers.

AIRCRAFT, MUNITIONS, MILITARY AND NAVAL SUPPLIES, AND OPERATIONS

Building construction for government needs. Equipment for same.

FUEL

Domestic consumption. Manufacturing necessities named herein.

FOOD AND COLLATERAL INDUSTRIES

Foodstuffs for human consumption, and plants handling same.

Feeding stuffs for domestic fowls and animals, and plants handling same.

All tools, utensils, implements, machinery, and equipment required for production, harvesting, and distribution, milling, preparing, canning, and refining foods and feeds such as seeds of foods and feeds, binder twine, etc.

Products of collateral industries, such as fertilizers, fertilizer ingredients, insecticides, and fungicides.

Containers for foods and feeds, collateral products.

Materials and equipment for preservation of foods and feeds, such as ammonia and other refrigeration supplies, including ice.

CLOTHING

For civilian population.

RAILROAD

Or other necessary transportation equipment, including water transportation.

PUBLIC UTILITIES

Serving war industries, Army, Navy, and civilian population.

Basis of Class C Work

In pamphlet No. 4 dated July 1 and issued by the priorities board late in July, the automatic priority plan was created. It then was stipulated that work furthering any item of the general purposes list which was not covered by a priority certificate or not taking an automatic priority rating, shall be put in Class C. Execution of orders of Class C character is to be so made that it does not interfere with the filling of AA, A and B orders. The classes AA, A and B, it will be recalled, are priority classes; in other words, may be given a priority rating either by the issuance of a priority certificate or from their purpose and uses take an automatic priority classification. No priority certificate is issued for or applied to Class C work. If reasonably prompt delivery can be obtained as a Class C order, there would be no occasion for the advancement of this order into the higher classes where a priority rating could issue. If, however, prompt delivery could not be obtained automatically as a Class C order, application may be made to the priorities committee for an advanced classification. In this case, if the work were of sufficient importance, the committee could raise the work to the advanced classes where a priority rating would be given.

The general purposes list, it will be seen upon examination, covers virtually all of the lines of production which are called for by work of a war or essential character. It will also be seen that the general purposes which it sets forth are well represented by the specific lines of purposes or uses of materials, equipment or supplies which are entitled as such to automatic priority ratings under Section 8 of Circular No. 4. In other words, the automatic priority classifications under Section 8 embrace specifically a good many lines of production which come within the purposes, cataloged by the basic general list.

The preference list is made up of industries and plants which in the public interest are entitled to preferential recognition. Preference list No. 1, which first appeared April 6, was designed primarily to cover the distribution of coal and coke and the transportation by rail and water of these fuels in behalf of the stipulated industries doing war or essential work so that the latter would be promptly supplied. This list was drawn up by the priorities board and was certified to the fuel and railroad administrations for their guidance. Under date of Sept. 7, Preference List No. 2, superseding Preference List No. 1 and all amendments and supplements to the latter was announced. This list is described by Chairman Baruch of the war industries board as the "master key covering the flow of basic industrial elements to the industries essential to the war program." This list is for guidance in "(1) the

The Term "Principally" Means 75 Per Cent of the Products Mentioned

Preference List Now in Effect

	Class
AGRICULTURAL IMPLEMENTS—See Farm Implements.	
AIRCRAFT—Plants engaged principally in manufacturing aircraft or aircraft supplies and equipment	I
AMMUNITION—Plants engaged principally in manufacturing same for the United States government and the allies	I
ARMY AND NAVY—Arsenals and navy yards	I
ARMY AND NAVY—Cantonments and camps	I
ARMS (Small)—Plants engaged principally in manufacturing same for the United States government and the allies	I
BAGS—Hemp, jute and cotton—Plants engaged principally in manufacturing same	IV
BLAST FURNACES—(Producing pig iron)	I
BOOTS AND SHOES—Plants engaged exclusively in manufacturing same	IV
BRASS AND COPPER—Plants engaged principally in rolling, and drawing copper brass and other copper alloys in the form of sheets, rods, wire and tubes	II
BUILDINGS—See Public Institutions and Buildings.	
CHAIN—Plants engaged principally in manufacturing iron and steel chain	III
CHEMICALS—Plants engaged principally in manufacturing chemicals for the production of military and naval explosives, ammunition and aircraft, and use in chemical warfare	I
CHEMICALS—Plants, not otherwise classified and listed, engaged principally in manufacturing chemicals	IV
COKE—Plants engaged principally in producing metallurgical coke and by-products, including toluol	I
COKE—Plants, not otherwise classified and listed, producing same	II
COPPER AND BRASS—See Brass and Copper.	
COTTON—Plants engaged in the compression of cotton	IV
COTTON TEXTILES—See Textiles.	
CRANES—Plants engaged principally in manufacturing locomotive or travelling cranes	II
DOMESTIC CONSUMERS—Fuel and electric energy for residential consumption, including homes, apartment houses, residential flats, restaurants and hotels	I
DOMESTIC CONSUMERS—Fuel and electric energy not otherwise specifically listed	III
DRUGS—Medicines and medical surgical supplies—Plants engaged principally in manufacturing same	IV
ELECTRICAL EQUIPMENT—Plants engaged principally in manufacturing same	III
EXPLOSIVES—Plants engaged principally in manufacturing same for military and naval purposes for the United States government and the allies	I
EXPLOSIVES—Plants, not otherwise classified or listed, engaged principally in manufacturing same	III
FARM IMPLEMENTS—Plants engaged principally in manufacturing agricultural implements and farm operating equipment	IV
FEED—Plants engaged principally in preparing or manufacturing feed for livestock and poultry	I
FERROALLOYS—Plants engaged principally in producing ferrochrome, ferromanganese, ferromolybdenum, ferrosilicon, ferrotungsten, ferrouranium, ferrovandium and ferrozirconium	II
FERTILIZERS—Plants engaged principally in producing same	IV
FIRE BRICK—Plants engaged principally in manufacturing same	IV
FOODS—Plants engaged principally in producing, milling, refining, preserving, refrigerating, wholesaling or storing food for human consumption embraced within the following description: all cereals and cereal products, meats, including poultry, fish, vegetables, fruit, sugar, syrups, glucose, butter, eggs, cheese, milk and cream, lard, lard compounds, oleomargarine and other substitutes for butter or lard, vegetable oils, beans, salt, coffee, baking powder, soda and yeast; also ammonia for refrigeration	I
FOODS—Plants engaged principally in producing, milling, preparing, refining, preserving, refrigerating or storing food for human consumption not otherwise specifically listed. Excepting here from plants producing confectionery, soft drinks and chewing gum	III
FOOD CONTAINERS—Plants engaged principally in manufacturing same	IV
FOUNDRIES (Iron)—Plants engaged principally in the manufacture of gray iron and malleable iron castings	IV
FUNGICIDES—See Insecticides and Fungicides.	
GAS—See Oil and Gas, also Public Utilities.	
GUNS (Large)—Plants engaged principally in manufacturing same for the United States government and the allies	I
HOSPITALS—See Public Institutions and Buildings.	
ICE—Plants engaged principally in manufacturing same	III
INSECTICIDES AND FUNGICIDES—Plants engaged principally in manufacturing same	IV
LAUNDRIES	IV
MACHINE TOOLS—Plants engaged principally in manufacturing same	II
MEDICINES—See Drugs and Medicines.	
MINES—Coal	I
MINES—Producing metals and ferroalloy minerals	II
MINES—Plants engaged principally in manufacturing mining tools or equipment	III
NAVY—See Army and Navy.	
NAVY DEPARTMENT—See War and Navy Departments.	
NEWSPAPERS AND PERIODICALS—Plants engaged principally in printing newspapers or periodicals which are entered at the postoffice as second-class mail matter	IV
OIL AND GAS—Plants engaged principally in producing oil or natural gas for fuel, or for mechanical purposes, including refining or manufacturing oil for fuel, or for mechanical purposes	I
OIL AND GAS—Pipe lines and pumping stations engaged in transporting oil or natural gas	I
OIL AND GAS—Plants engaged principally in manufacturing equipment or supplies for producing or transporting oil or natural gas, or for refining and manufacturing oil for fuel or for mechanical purposes	III
PAPER AND PULP—See Pulp and Paper.	
PERIODICALS—See Newspapers and Periodicals.	
PUBLIC INSTITUTIONS AND BUILDINGS (Maintenance and operation of)—Other than hospitals and sanitariums	III
PUBLIC INSTITUTIONS AND BUILDINGS (Maintenance and operation of)—Used as hospitals or sanitariums	I
PUBLIC UTILITIES—Gas plants producing toluol	I
PUBLIC UTILITIES—Street railways, electric lighting and power companies, gas plants not otherwise classified, telephone and telegraph companies, water supply companies, and like general utilities	II
PUBLIC UTILITIES—Plants engaged principally in manufacturing equipment for railways or other public utilities	II
PULP AND PAPER—Plants engaged exclusively in manufacturing same	IV
RAILWAYS—Operated by United States Railroad Administration	I
RAILWAYS—Not operated by United States Railroad Administration (excluding those operated as plant facilities)	II
RAILWAYS (Street)—See Public Utilities.	
ROPE—See Twine and Rope.	
ROPE WIRE—See Wire Rope.	
SANITARIUMS—See Public Institutions and Buildings.	
SHIPS (Maintenance and operation of)—Excluding pleasure craft not common carriers	I
SHIPS—Plants engaged principally in building ships, **excluding** (a) pleasure craft not common carriers, (b) ships not built for the United States government or the allies nor under license from United States shipping board	I
SOAP—Plants engaged principally in manufacturing same	IV
STEEL-MAKING FURNACES—Plants engaged solely in manufacturing ingots and steel castings by the open hearth, bessemer, crucible or electric furnace process, including blooming mills, billet mills and slabbing mills for same	I
STEEL PLATE MILLS	I
STEEL RAIL MILLS—Rolling rails fifty (50) or more pounds per yard	II
STEEL—All plants operating steel rolling and drawing mills exclusive of those taking higher classification	III
SURGICAL SUPPLIES—See Drugs and Medicines.	
TANNERS—Plants engaged principally in tanning leather	IV
TANNING—Plants engaged principally in manufacturing tanning extracts	IV
TEXTILES—Plants engaged principally in manufacturing cotton textiles including spinning, weaving and finishing	IV
TEXTILES—Plants engaged principally in manufacturing woolen textiles including spinners, top makers and weavers	IV
TEXTILES—Plants engaged principally in manufacturing cotton or woolen knit goods	IV
TEXTILES—Plants engaged principally in manufacturing textile machinery	IV
TIN PLATES—Plants engaged principally in manufacturing same	III
TOBACCO—Only for preserving, drying, curing, packing, and storing same—not for manufacturing and marketing	IV
TOLUOL—See Coke, also Public Utilities.	
TOOLS—Plants engaged principally in manufacturing small or hand tools for working wood or metal	III
TWINE Binder and Rope—Plants engaged principally in manufacturing same	IV
WAR AND NAVY DEPARTMENTS—Construction work conducted by either the war department or the navy department of the United States in embarkation ports, harbors, fortified places, flood protection operations, docks, locks, channels, inland waterways and in the maintenance and repair of same	II
WIRE ROPE AND ROPE WIRE—Plants engaged principally in manufacturing same	II
WOOLEN TEXTILES—See Textiles.	

P. L. FORM No. 1 No.....
(For use of Committee)

Date.....

To The Priorities Board of War Industries Board, Washington, D. C.

The undersigned hereby makes request to be placed on Preference List of industries and plants for the reasons stated below:

DEFINITIONS OF TERMS

1. The term "the Allies" shall be taken to mean the nations associated with the United States in the war in which it is now engaged.

2. The term "Government" includes the United States Government and the Allies.

3. The term "direct Government orders" signifies any order or contract placed by the War Department or the Navy Department of the United States, or the U. S. Shipping Board Emergency Fleet Corporation, or by the Allies.

4. The term "indirect Government orders" signifies materials, supplies, or equipment necessary in the manufacture of or as component parts of direct Government orders.

5. "Work of exceptional or national importance" shall be taken to mean work which, while not primarily designed for the prosecution of the war, yet is of great public interest and essential to the national welfare, such as equipment and supplies for railroads and other public utilities; equipment and tools for mining of fuel and ores required in war work; agricultural implements; food containers; repairs to existing industrial machinery; and other work of similar character.

NOTE.—If there is insufficient room in spaces provided for answering any of these questions, use separate sheet(s) numbered to correspond with question; or blank pages two and four may be used.

1—Insert here name and address of applicant.	Name: General office address:
2—Location of particular plant for which preference is requested.	City or town: Served by what railroads:
3—Nature of product or products. If more than one, approximate per cent of each to total production	
4—List here the numbers, ratings, and subject matters of Priority Certificates (if any), and Government numbers of orders upon which applicant is working.	
5—If applicant has no direct Government orders, but does have indirect Government orders, full details must be given here.	
6—State here full details of work (if any) of exceptional or national importance not covered by paragraphs 4 and 5.	
7—Has applicant the plant and equipment necessary, and now available, to execute all war orders upon which he is now engaged?	
8—What per cent of applicant's plant output is now devoted to Government orders?	8, 9 and 10 should total 100 per cent.
9—What per cent of applicant's plant output is now devoted to indirect Government orders?	
10—What per cent of work is "of exceptional or national importance" as above defined?	
11—All other work (percentage).	
12—Close approximate monthly requirements of fuel for all purposes.	(a) Coal (tons) (b) Coke (tons) (c) Fuel oil (gallons) (d) Gas (cu. ft.)
13—Close approximate monthly requirements of fuel for the filling of orders referred to in paragraphs 8, 9 and 10.	(a) Coal (tons) (b) Coke (tons) (c) Fuel oil (gallons) (d) Gas (cu. ft.)
14—Further information conceived to be of importance in the consideration of this application.	

The undersigned, being first duly sworn, on oath says that the statements contained in the foregoing application are full true, and correct.

Subscribed and sworn to before me this.....day of..... 1918

.....
Notary Public

.....
(Name of corporation, firm, or individual)

By.....
(Name of officer legally empowered to act for applicant)

In and for.....

APPLICATION FORM FOR ADMISSION TO PREFERENCE LIST

production and supply of fuel and electrical energy, (2) in the supply of labor and (3) in the supply of transportation service by rail, water, pipe lines or otherwise, insofar as such service contributed to the production of finished products." In Preference List No. 2 industries and plants have been divided according to their relative importance in classes I, II, III and IV. In classifying industries, consideration and weight has been given to, (1) the intrinsic importance of the product for use during the war and the urgency of the demand; (2) the necessity for maintaining or stimulating and increasing the total production; (3) the proportion of the capacity of the industry or plant devoted to the production of the essential product. In some cases, individual plants have been listed in the preference classes. This is because in some cases individual units have been found entitled to preference, although the industry to which they belonged is not; in other cases particular plants in an industry which has been given preferential recognition, have been placed in a higher class. Industries and plants grouped under class I are those of exceptional importance in war production and their requirements are to be fully satisfied in preference to those of the three remaining classes. Requirements of industries and plants grouped under classes II, III and IV take precedence over industries and plants which do not appear on the preference list. There is no distinction or preference between the three classes themselves. The preference list is to be amended or revised from time to time to meet changing conditions.

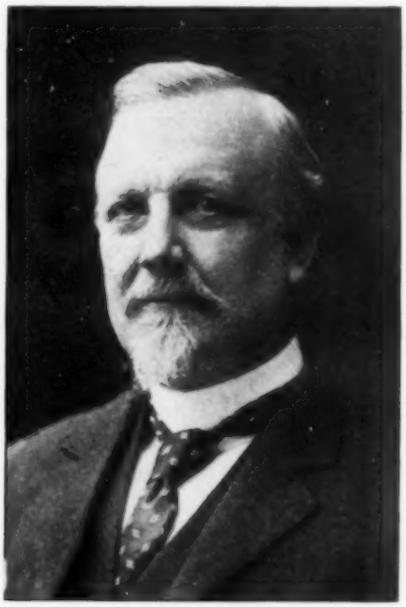
In distinction from the general purposes list, the preference list is more exact. The purposes list defines the general purposes demanding preferential treatment. The preference list designates the line of general industry or individual plant entitled to preference treatment, in essential elements of production. While Preference List No. 1 was issued April 6 and preceded by one month the announcement of the general purposes list, the latter was actually prepared by the priorities board on March 22. The general purposes list, in fact, is the general basis for the preference list, the latter appearing in more specific form. Any orders or work involving materials, equipment or supplies which are placed by or are to be used in connection with an industry or plant included in the preference list and are not covered by a priority certificate or an automatic rating take a Class C standing upon being certified by affidavit.

Obituaries

WILLIAM KENT, of Montclair, N. J., one of the nation's leading engineers and chief exponents of the promotion of engineering education, died Sept. 18, at his summer home, Gananoque, Ont., aged 67 years. His remarkable training and versatility as well as the fullness of his career is shown by his having served at one stage or another of his life as chemist, scientist, inventor, engineer, editor, author, lecturer, professor and dean. His achievements were as numerous and notable as the broadness of his professional capacity.

The keystone to Mr. Kent's success is represented in Kent's Mechanical Engineer's Pocket Book, which work lives after him. His devotion to an ideal is shown in that it required four years to complete this work, after he had spent almost 20 years collecting material for it. He produced the handbook because he was an ardent believer in the cause of engineering education and always sought to further that cause with a fidelity that became a passion. As witness to his extensive knowledge in engineering fields, he was one of the first men to take up and develop scientific management; he was a leading authority on steam boilers and foundry practice; he was an expert in cost accounting; he made a special study of the strength of materials, which is the foundation of all engineering. For many years he had been an expert in the properties of iron and steel as applied to structural purposes. Mr. Kent was at all times, fearless in his beliefs. He never hesitated to declare his opinions even though they appeared to conflict with what was considered the best thought of the day.

He was born in Philadelphia, March 5, 1851. After he was graduated in 1868 from a high school of that city, he obtained his first position as clerk and bookkeeper in a coal shipping house. He served in this way for two years and then for about two and one-half years was bookkeeper in the Jersey City gas office. His evenings were spent in night school at Cooper Union, New York, and after graduating with the class of 1872, he became a bookkeeper for the Ringwood Iron Works, Hewitt, N. J. Here he obtained considerable practice in engineering and chemistry. Depression following the panic of 1873 caused the Ringwood company to shut down its blast furnace and at the end of the following year, Mr. Kent entered Stevens Institute of Technology as a special student. In June, 1875, he was appointed assistant to Prof. R. H. Thurston in the work of the United States iron and steel testing board. Under the latter's supervision, he carried on a two-year research on the properties of copper and tin and copper and zinc alloys. After qualifying as a regular senior class student, he was graduated in 1876 with an M. E. degree. While working for a firm



WILLIAM KENT

of blast furnace operators the following year, he took a trip through the then new iron district of the Hocking Valley, in Ohio. An account of the trip which he wrote for the *American Manufacturer,* led to his appointment as editor. After serving in that capacity for two years, he became general assistant and then open hearth department superintendent for Schoenberger & Co., Pittsburgh. In 1882, he resigned because of ill health and went to Europe. Three months later, he opened a Pittsburgh office for the Babcock & Wilcox Co., introducing that company's boilers in western Pennsylvania and eastern Ohio territories. It was at this time he formed a partnership with William F. Zimmerman, known as the Pittsburgh Testing Laboratory, which three years later, was sold to Hunt & Clapp. In 1883, he became superintendent of sales and engineer of tests for the Babcock & Wilcox Co., being transferred to its New York office. Two years later, he resigned to become general manager of the Springer Torsion Balance Co. In that capacity he developed the invention of the balance scale which is used generally in the retail drug trade. He built and equipped a factory in Jersey City for its manufacture. In 1890, he opened an office in New York as consulting engineer and for 13 years his diversified talents kept him exceedingly busy as designing and construction engineer and in running engine and boiler tests. It was in 1895 he published his "Mechanical Engineer's Pocket Book." From 1895 until 1903, he was an associate editor for *Engineering News.* For a number of years, he held a similar position on the staff of *Industrial Engineering.* In the two papers, from time to time appeared many articles from his pen. In 1898 and 1901, he obtained patents on the "Wingwall" smokeless furnace for steam boilers. In 1903, he obtained a patent on a gas producer for use in connection with gas engines. In that same year he accepted the position of dean and professor of mechanical engineering in the L. C. Smith college of applied science in Syracuse, university, serving for several years. Mr. Kent had lectured at practically all the leading and technical and scientific schools of the country. He was associated with many engineering societies, having been a member of the American Institute of Mining Engineers since 1876 and of the American Society of Mechanical Enginers since its inauguration in 1880. He was made vice president of the latter society in 1888 and served two years. In 1905, he was made president of the American Society of Heating and Ventilating Engineers.

Nicholas Kelly, president of the N. Kelly & Son Co., Pittsburgh, died Wednesday afternoon following an illness of about three months. He became identified with the foundry business shortly before the outbreak of the Civil war and at the conclusion of the war, with James Neil of Pittsburgh, established the firm of James Neil & Co. In 1868 he established the firm that bears his name. He retired from active business about two years ago.

Settle Priority Doubts of Jobbers

Series of Questions and Answers on Obscure Points Issued by Priority Committee—Warehouses Must Obtain Permit to Ship Up to Five Tons to Civilian Wants Not on Preference Footing

WASHINGTON, Sept. 24.—Superseding similar memoranda covering priority in handling jobbers' stocks, the war industries board has made public in Form DSS 100 a brief letter under date of Sept. 5 for the attention of Andrew Wheeler, chief of the bureau of warehouse distribution under Steel Director Replogle, from Maurice Hirsch, secretary of the priorities committee. This memorandum covers some of the points taken up in a series of questions and answers between Mr. Wheeler and George D. McIlvaine, secretary of the National Pipe and Supplies association.

Wholly apart from this memorandum is this point which the steel division desires to be thoroughly understood: A manufacturing mill cannot obtain warehouse prices on stock shipped from its own warehouses. It has been found that some manufacturers have built warehouses, which are operated either in the name of the manufacturer or some concern financed by the manufacturer, and have sold the stock at warehouse prices. Others have sold directly from their own warehouses. These instances, the steel division points out, are violations of the arrangement under which steel is being distributed and must be discontinued.

The series of questions and answers is as follows:

Question 1. Can a jobber make delivery on orders not exceeding in the aggregate five tons when the delivery is not for purposes covered by any of the classifications entitled to preference treatment?

Answer. The 5-ton blanket permit granted for deliveries for essential civilian requirements not included within the general classification *does not apply to distribution by jobbers.* If the jobber of iron or steel products has material which he desires to deliver for purposes not within such classifications, he must secure a permit from the director of steel supply. The application for a permit to ship must be made by the jobber and not by the purchaser.

Question 2. Should reports be made by jobbers to the director of steel supply on other than tonnage items?

Answer. The director of steel supply does not require, nor in fact provide for, reports by jobbers on heavy hardware, farm implements, mining tools, mining machinery, and mining equipment, oil-well supplies, and various other finished products, but requires such report only on tonnage items, such as plates, sheets, bars and shapes, structural shapes, tubular products, etc.

Question 3. How can a jobber secure the B-4 automatic rating on the iron and steel products with reference to which the director of steel supply does not require a report?

Answer. A jobber is entitled to the B-4 automatic rating for replacement of shipments made by him during the preceding month, provided he files the jobbers' pledge with the director of steel supply and with the priorities committee and provided he accompanies his order with the affidavit set out in section 8 of circular No. 4 issued by the priorities division.

Question 4. What is the exact procedure to be followed by a jobber in order to obtain the B-4 automatic classification?

Answer. First, the jobber must send to the director of steel supply and to the priorities committee the pledge prescribed in the following form:

> I do hereby pledge myself not to use or so far as lies within my power, permit the use of any stocks now in or which may hereafter come into my possession or control, save (1) for essential uses as that term may be defined from time to time by the priorities division of the war industries board, or (2) under permits in writing signed by the director of steel supply; that I will make no sale or delivery from such stocks to any customer or retailer before his filing with me a similar pledge in writing; and that I will use my utmost endeavor to prevent the hoarding of stocks and to insure that they be distributed solely for for essential uses.

Second, in placing his orders for replacement he must accompany his order by an affidavit in the following form:

> Unless rerated by express order in writing by the priorities committee of the war industries board, this order is by authority of said priorities committee rated as Class B-4 under and by virtue of subdivision (s) of section 8 of circular No. 4 issued by the priorities division of the war industries board of date July 1, 1918, and all amendments thereto.
>
> For the purpose of securing the said rating I do solemnly swear—
>
> (1) That I have taken and filed whatever pledge is required by the war industries board from the industry of which I am a member; and
>
> (2) That the materials, equipment, or supplies covered by this order are intended for use, and will be used, for the purpose or purposes mentioned in the said subdivision or subdivisions of said section 8, and for no other purpose.

Question 5. Does the B-4 rating apply to retailers on orders placed by them directly with the manufacturers?

Answer. The automatic B-4 rating applies to retailers as well as to jobbers, provided all the conditions above suggested (including the pledge with the director of steel supply and with the priorities committee) are complied with. The B-4 rating of course applies only on sufficient quantities to make replacement of the previous months' distribution for purposes embodied within priority classes AA, A, B, and C or under permit from the director of steel supply.

Question 6. Must the jobber and retailer in every instance secure a pledge from the actual user of iron and steel products?

Answer. The jobber must require of the retailer or customer a pledge in the following form:

> I do hereby pledge myself not to use, or so far as lies within my power permit the use of, any stocks now in, or which may hereafter come into, my possession or control, save for essential uses, as that term may be defined from time to time by the priorities division of the war industries board; that I will not hoard, or countenance the hoarding of, stocks, and will use my utmost endeavor to insure that they be distributed and applied solely to essential uses.

The retailer is not required to ex act pledges from the actual users or consumers of iron or steel products delivered by him, although he may do so if he has any doubt as to the use of materials desired. The jobber or retailer is depended upon to see that, in accordance with the terms of his pledge, the products being distributed by him are applied solely to uses entitled to preference treatmeat.

Question 7. Must the jobber accompany with an affidavit each order placed by him with a manufacturer?

Answer. The automatic classification is designed to do away with the necessity for the issuance of a priority certificate. To the extent that an application for a priority certificate could cover several orders, to the same extent can one affidavit cover several orders. In other words, if a jobber has placed in the course of a week 50 orders with a manufacturer, and each of these orders is entitled to the B-4 automatic rating, then the jobber may make one affidavit referring specifically to each of

the orders and secure thereby the automatic classification on all of them. However, each order to be entitled to the automatic rating must be specifically referred to in an affidavit in proper form.

Question 8. Must a retailer accompany with a pledge each order placed by him with a jobber?

Answer. When a retailer has once given his pledge to the jobber in the form set cut in question 6 above, he need not accompany subsequent orders with pledges, insomuch as one pledge covers all stocks which are "now in or which may hereafter come into" his possession.

Question 9. Are jobbers required to furnish manufacturers daily, weekly, or monthly reports of materials shipped from jobbers' stocks?

Answer. Reports of sales are not required to be made by the jobber to the manufacturer. The only report required of the jobber is the report to the director of steel supply on tonnage items as explained in question 2 above.

Question 10. Does the automatic B-4 rating compel the mills to accept orders for the quantity of materials so covered?

Answer. The automatic B-4 rating does not apply until after the order has actually been placed. It is not designed to force the steel mills to accept the orders. The jobber should wherever possible place his orders with his usual source of supply, and when the order is accepted it will take the B-4 classification, when the conditions upon which the B-4 rating is given have been satisfactorily complied with.

Question 11. What deliveries may be made by jobbers or retailers for industries not covered in the general classification?

Anwer. It should be noted that deliveries may be made "For the maintenance of existing equipment for the supply of heat, light, power, and sanitation" and "For the necessary supplies and essential repairs (not extensions or replacements) to existing buildings and manufacturing plants." (See Sec. II, subdivisions (a) and (b) of supplement No. 1.) Likewise delivery may be made of "nails, screws, rivets, bolts, and nuts for any purpose." (See Sec. II, subdivision (f) of supplement No. 1.) However, in the delivery of nails, screws, etc., the patriotism of the jobber and retailer is depended upon to see that there is no hoarding or misuse of these commodities.

Question 12. Is it required that new orders be placed by jobbers in order to entitled them to the automatic B-4 rating, or may such rating apply on old orders to the extent that delivery is made by the jobber under the conditions entitling him to the rating?

Answer. The automatic B-4 rating will apply on old orders as well as on new orders, but will cover delivery only to the extent that the jobber is entitled to delivery under the regulations covering the B-4 classification. It is not necessary that old orders be canceled and new orders placed in order to secure the automatic rating. However, the proper affidavit must be sent to the producer or manufacturer to be attached to the orders before the B-4 rating will apply.

Question 13. Does the automatic B-4 priority rating apply on materials other than iron and steel and iron and steel products?

Answer. Up to the present time the automatic B-4 rating applies solely to iron and steel and iron and steel products.

Question 14. In cases where the jobber does not have certain material in stock and the order has been placed with the manufacturer through the jobber, can priority be obtained on the order so placed?

Answer. Applications for priority certificates should be made against the actual producer or manufacturer; this principle likewise applies to automatic priority ratings. The priorities committee will not administer priority against jobbers, brokers, or middlemen. However, the priorities application, Form P. C. 15, makes provision to care for such orders as are placed through the jobber or agent; in such case the name of the concern through whom the order is placed appearing in paragraph (4) of the application form. To the same extent that the regular application form P. C. 15, allows a government department or concern intending to use materials to request priority on orders placed through jobbers or agents so to the same extent may the automatic ratings be allowed on orders placed through jobbers or agents. The department or concern ordering the materials through the jobbers or agent should make out the indorsement as is provided in the sections allowing automatic ratings (secs. 7, 8 and 9 of circular No. 4), directing such indorsement or affidavit to the concern actually producing or manufacturing the materials desired and noting in the indorsement or affidavit that the order is placed through the jobber or agent.

Question 15. Is the jobber confined in his deliveries to purposes entitled to a rating of B-4 or higher, or may he deliver for any purpose falling within the classifications entitled to preference treatment?

Answer. The jobber may distribute for purposes falling within any of the priority classifications whether class AA, class A, class B, or class C, and he may likewise distribute under permits issued by the director of steel supply. The distribution by the jobber is made without reference to specific priority rating provided only that the purposes for which materials are desired come within the classifications above referred to. Delivery may therefore be made for purposes within C classification as well as for purposes which would, if the order were placed with the manufacturer, be entitled to higher ratings. The jobber is allowed the B-4 automatic priority classification for replacement of materials delivered for purposes within any of the classifications above noted.

Coal By-Product Output

Washington, Sept. 24.—In its report to the President on the census of dyes and coal tar chemicals in 1917, as part of the tariff information series, the United States tariff commission has disclosed some interesting facts relative to the by-products obtained in the manufacture of coke, taken from advance sheets of "Mineral Resources of the United States", which is to be published by the geological survey. The report, in addition to giving the facts of the census, also presents a history of the dye industry of the country, together with statistics of imports and exports and a directory of manufacturers of coal tar products.

The commission informs the President 22,439,280 net tons of by-product coke were manufactured in 1917, as against 19,069,361 in 1916, 14,072,895 in 1915 and 11,219,943 in 1914. Beehive coke in 1917 aggregated 35,777,702 net tons, or 60 per cent of the total coke production. In 1916 the beehive product was 35,464,224 tons, or 65 per cent and in the year before 27,508,255 tons, equivalent to 66.2 per cent. In value, the 1917 by-product coke output reached $138,643,153 as against $75,373,000 in 1916 and $48,558,325 in 1915.

As to the output of benzol products, the report shows 7,395,000 gallons of toluol in 1917 as against 3,939,000 in 1916; 36,804,000 gallons of benzol in 1917, compared with 21,079,000 in the year before. The production of sulphate of ammonia increased from 271,832,000 pounds in 1916 to 352,722,000 in 1917 and in liquid ammonia the increase was from 3,224,000 gallons to 7,055,000 gallons. The tar output was 221,999,000 last year, compared with 185,506,000 in 1916. Increases in the production of solvent naphthas, naphthalene, gas, coke breeze, etc., were equally as great. The total value of 1917's output of by-products was $206,789,163 as compared with $137,304,665 in 1916, $78,382,904 in 1915 and $55,609,255 in 1914.

"The coke manufacturer is interested primarily in the quality of his coke for making pig iron," the comsion tells the President, "whereas the city gas company is interested primarily in the illuminating and calorific value and yield of the gas. These divergent requirements have resulted in the development of different designs of apparatus for the two purposes, which give tars of somewhat different quality. The tar is a by-product and therefore the quantity produced depends not primarily on the demand for tar itself but on that for coal gas for city use and for coke made in by-product ovens. The old beehive coke ovens, which waste the by-products, are being rapidly replaced by improved equipment which saves these valuable consituents."

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

BENJAMIN D. FULLER, who has been affiliated for many years with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has tendered his resignation as superintendent of the foundries operated by this company. During the past eight years Mr. Fuller has been located in Cleveland, in direct charge of the large gray and malleable iron foundries operated by the Westinghouse company in that city. Prior to that time Mr. Fuller was located in Pittsburgh. On Oct. 15 Mr. Fuller accepts a position as vice president and manager of interests controlled by W. D. Uptegraff, Pittsburgh, including the Niagara Electric Furnace Co., Defiance Paper Co. and the Niagara Wall Paper Co., all located at Niagara Falls, N. Y. Mr. Fuller is president of the American Foundrymen's association, and also is a member of the committee on iron and steel scrap of the American Iron and Steel institute. He is a past president of the Pittsburgh Foundrymen's association and has been a director of the American Foundrymen's association for many years.

The employes of the Cleveland plant of the Westinghouse Electric & Mfg. Co. presented Mr. Fuller with a gold watch, chain and penknife and a handsomely embossed testimonial in appreciation of the many kindnesses of their former superintendent.

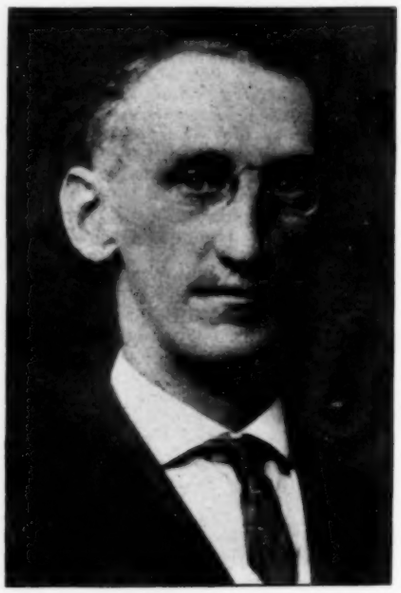
James A. Trainor has been made assistant general sales manager of the American Flexible Bolt Co., 50 Church street, New York.

Paul B. Morgan, president and treasurer of the Morgan Construction Co., Worcester, Mass., has been elected a director of the Worcester Gas Light Co.

William P. Palmer, Cleveland, president of the American Steel & Wire Co., who has been making his headquarters at the north works, Worcester, Mass., during the summer months has returned to Cleveland.

N. J. Clarke, secretary of the Upson Nut Co., Cleveland, was presented with a watch and chain at the meeting of the Bolt, Nut and Rivet institute, held at the Hotel Statler, Cleveland, Sept. 18. Mr. Clarke now is a major in the ordnance department of the army.

Franklin H. Brunner, who for many years was affiliated with the Guerger Engineering Co., Bethlehem, Pa., serving for the last 13 years as its secretary, resigned recently to enter another line of activity.



BENJAMIN D. FULLER

A. J. Barnes has been appointed export manager for the Shepard Electric Crane & Hoist Co., with headquarters at Montour Falls, N. Y. He will continue his duties as director of publicity.

M. R. Rosse, Pacific coast sales manager for the American Steel Export Co., New York, has been placed in charge of the recently opened office of the company at 1203 Smith building, Seattle, Wash.

Maj. Joseph T. Speer, president of the Pittsburgh Valve Foundry & Construction Co., Pittsburgh, was elected an honorary member of the Pittsburgh Foundrymen's association, at its September meeting.

Robert S. Maddocks, who is a son of R. H. Maddocks, district sales manager in New York for the Central Iron & Steel Co., has become affiliated with the Smiley Steel Co., 111 Broadway, New York.

J. M. Larkin has been made assistant to President E. G. Grace of the Bethlehem Steel Co. He will administer the affairs of the new department created for the purpose of dealing with labor relations and associated industrial questions.

Earl H. Jaynes, of the Cleveland-Cliffs Iron Co., Cleveland, who has made a study of war taxation, has been made one of five members of the war tax committee just announced by the National Association of Credit Men.

Charles E. Muchnic, vice president of the American Locomotive Sales Corp., New York, was elected a director of the Magor Car Corp., Passaic, N. J., to succeed George E. Brown, at its annual meeting, the other directors being re-elected.

J. C. Weedon has been made railroad representative for the Anchor Packing Co., with headquarters at Chicago, succeeding J. A. McNulty, who has resigned to become master mechanic for the Chicago, Milwaukee & St. Paul railroad at Dubuque, Iowa.

Roger W. Babson, Wellesley Hills, Mass., the well known statistician and economist and director general of information and education of the department of labor, Washington, was operated on for appendicitis at the Massachusetts General hospital, Boston.

M. W. Hanks, Chicago, who has been manager of standards for the Society of Automobile Engineers, has resigned to become connected with the navy department, in charge of standardization of specifications for aircraft materials and fabricated parts.

G. W. Peffer, who has been superintendent of the open hearth department of the Republic Iron & Steel Co., Youngstown, O., for about seven years, presented his resignation recently to take effect in about 30 days. He will locate in Buffalo as general manager for the Donner Steel Co. No successor has been named as yet at Youngstown.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

DAVID N. PETTY, who was elected president of the Association of Iron and Steel Electrical Engineers at that organization's twelfth annual meeting which was held in Baltimore, Sept. 11 to 14, is one of the leading steel works electrical engineers of the country. At present Mr. Petty is superintendent of the electrical department at the Bethlehem Steel Co.'s Lehigh works, Bethlehem, Pa.

R. C. Steese, director of the Brier Hill Steel Co., has been named the employers' representative on the community labor board at Youngstown, O., to succeed Thomas McDonald, resigned. O. J. Grubb, president of the United Labor Congress, will be the employes' representative. The two will name the third member.

W. A. King, Washington, has been appointed to act as resident representative of the National Federation of Building Industries, Philadelphia, of which H. A. Smith is acting secretary. For some time, he has been connected with the National Association of Builders' Exchanges as its general council.

Frederick Phelps, Waukesha, Wis., has become manager of the procurement division of the Duesenberg Motors Co., Elizabeth, N. Y. Mr. Phelps is largely interested in the Arcadian Mineral Spring Co., Waukesha, which has temporarily closed its plant. He also is a stockholder in numerous industrial enterprises at Waukesha and elsewhere.

F. E. Burrall, president of the Oneida Motor Truck Co., the McIntyre-Burrall Co., and other large industries of Green Bay, Wis., has been appointed chairman of the Brown-Door-Kewaunee county district, known as section four of region 17, division of resources and conversion, war industries board. He succeeds the late John C. Fogarty.

John F. Kelly will leave his present position as assistant to the superintendent, electrical department, National Tube Co., McKeesport, Pa., shortly to accept the permanent secretaryship of the Association of Iron and Steel Electrical Engineers, which was arranged for at that body's recent annual convention at Baltmiore. He will be located at the association's headquarters at 513 Empire building, Pittsburgh.

Edward W. Cardinal has withdrawn from the Carlin Steel Products Co.,

DAVID N. PETTY

Commercial Trust building, Philadelphia. D. L. Schwartz, formerly Philadelphia representative of the Pittsburgh Screw & Bolt Co., has become associated with John Lindauer, Jr., in the Carlin Steel Products Co. Mr. Carlin has organized the Cardinal Tool Co., which will manufacture rivet sets and bridge reamers at 2217 Chestnut street, Philadelphia.

James A. Campbell, president of the Youngstown Sheet & Tube Co., Youngstown, O., celebrated his sixty-fourth birthday on Sept. 7, receiving the felicitations of friends and business associates in his offices in the Stambaugh building. A fine collection of fruits, flowers and vegetables was displayed on a table in his office all of which Mr. Campbell had raised on his farm on the Logan road, north of Youngstown.

S. Griswold Flagg 3d, junior partner of Stanley G. Flagg & Co., Philadelphia, and manager of its Pottstown, Pa., plant, has been commissioned a naval constructor with rank of lieutenant, senior grade, and has been called to active service at the naval aircraft factory, League island navy yard, Philadelphia. He has been appointed assistant general manager of this plant and has been placed in charge of aircraft factory No. 1.

F. C. Tomlinson has resigned as president and treasurer of the Ironton Engine Co., Ironton, O., and has disposed of his holdings to E. B. Hetzel. A re-organization has been effected and Mr. Hetzel, formerly secretary and general manager, has been made president. E. H. Alfree succeeds him in those capacities and Otto Marting is treasurer. Mr. Tomlinson will not engage in active business for the present.

Henry M. Robinson, formerly of Youngstown, O., who for the past 15 years has been located in Los Angeles, latterly as western advjser of the war industries board, has been named export director of the United States shipping board in which capacity he will report only to E. N. Hurley, chairman of the board. Mr. Robinson is to serve both for the balance of the war and during the reconstruction period to follow.

Payne G. West has been appointed assistant manager of field sales for the Lakewood Engineering Co., Cleveland. After being graduated with the class of 1901 from Carroll college, he studied civil engineering for two years at the University of Wisconsin. In 1907 he became associated with T. L. Smith Co., Milwaukee, where he has remained ever since, serving most of the intervening time as assistant sales manager.

Richard P. Tell, president of the National Brake & Electric Co., Milwaukee, has been elected chairman of the Wisconsin state war industries board to succeed August H. Vogel, regional advisor of the Wisconsin district, who resigned because of the apparent conflict of federal and state positions. Mr. Tell previously was elected chairman of the Milwaukee-Waukesha county district. He is president of the Milwaukee Metal Trades and Founders' association.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Greatest Tax in History Before Senate

UNANIMOUSLY, the greatest revenue bill in history was passed by the house at Washington Friday, after less than 24 hours of actual debate. Representative Nicholas Longworth, in giving the bill its valedictory, said it was the unanimous answer of the representatives of the American people to the Austrian peace note. "It notifies Burian that we purpose to deal with the head and not with the tail of the German daschund," he said. The bill, which is designed to raise by taxation approximately $8,182,000,000, is little changed from the form in which it came from the ways and means committee. Some real tinkering with the bill is expected, however, when it reaches the senate. In that body there is strong opposition to the theory of the Kitchin bill and a rather general leaning evidently exists toward consumption taxes. It is felt in some quarters that Mr. Kitchin's scheme to tax the corporations and the well-to-do means that taxing stops where voting starts. The senate committee is expected to consider the bill for several weeks before making its report and prospects are it will be months before the bill becomes a law.

Allow for Mineral Depletion

Among the final changes in the house bill was an amendment providing an allowance to oil well producers and developers a deduction of 10 per cent of the estimated value of the oil in the ground. They had asked 20 per cent. Another amendment gave "other mineral deposits" the benefit of the same "reasonable allowance for depletion." Another amendment relieves Liberty bonds and other tax free securities from the imposition of an indirect tax. Still another change gave Liberty bond investments during the taxable year the benefit of 12 per cent instead of the 18 per cent normal income tax rate. The occupational tax was changed so as to apply to business or professions earning $2500 or more a year instead of $2000 and professional persons working for salaries were exempted from the tax of $10 or $15 on wholesale businesses.

Decides Stock Ownership

Judge Charles P. Orr in the United States district court, Pittsburgh, has signed an order in which he decreed that 973 of the 14,871 shares of the stock of the Green County Coal Co., held by the Farmers National bank of Pittsburgh as collateral for J. V. Thompson's indebtedness to the bank, belonged to Andrew A. Thompson and not to J. V. Thompson. Some time ago the trustees petitioned the court to restrain the sale of the shares in question and the court ordered an investigation by the referee, the result of which was to confirm that the shares were the property of Andrew A. Thompson.

Increased Profit Reduced by War Taxes

With net profits of $9,930,088 for the fiscal year ended June 30, 1918, the American Locomotive Co. increased its previous year's gains by $523,089. According to Andrew Fletcher, president of the company only $893,817 of the profits was obtained from the company's munitions contracts, the remainder or $9,036,276 being derived from the regular locomotive business. War income and excess profits taxes however, reduced the profit to $5,911,137 for the year, as compared with $7,201,680 for the preceding one.

After the deduction of preferred dividends, the net profits were $4,161,137, equivalent to $16.64 a share on the $25,000,000 common stock as compared with $5,451,680, or $21.80 a share in the preceding fiscal period. The deduction of $4,018,951 for taxes fully provides for income and war profits taxes computed in accordance with existing laws of the United States and Canada. It also includes an allowance of $1,400,000 for anticipated increases in the United States war income and excess profits taxes for the six months ended June 30, 1918, which may become effective with the enactment of the new revenue bill now pending in congress.

The company charged against earnings the writing down of book value of its drawings and patterns from $981,193 to $1. This deduction which was actually a surplus charge was equivalent to $3.55 a share on stock.

At the close of the fiscal year the company had unfilled orders on its books amounting to $74,736,643 as against $77,620,449 a year previous. The consolidated income account of the company compares as follows:

	1918	1917
Gross earnings	$80,588,070	$82,213,845
Exp. dep., etc.	70,358,565	72,614,654
Interest	299,417	192,192
Taxes	4,018,951	2,205,319
Pfd. divs.	1,750,000	1,750,000
Profit	$ 5,911,137	$ 7,201,680
Balance	$ 4,161,137	$5 ,451,680
Com. divs.	1,250,000	1,500,000
Add. and bett.	1,000,000	2,000,000
Surplus	$ 1,911,137	$ 1,951,680

In his statement to stockholders, President Fletcher says in part:

During September and October, 1917, the company completed a contract with our government for 150 locomotives to be used in France for the transportation to the front of our troops and supplies.

Under contract date of April 30, 1918, this company received from the United States railroad administration, for the account of the railroads operated by it, an order for 800 locomotives of the administration's standardized designs. The locomotives of this order are now in progress of manufacture and a number have been delivered.

The plants of all the locomotive builders of this country will be taxed to their maximum capacity during the war and probably for some time thereafter, to supply the requirements of the railroad operated by the United States railroad administration, industrial plants engaged in manufacturing war essentials, and to meet the demands of our government and its allies for foreign service.

It is believed that the standardizing of locomotive design for domestic railroads will be a substantial factor in producing maximum tonnage production from the plants of the various builders.

Advocates After-the-War Price Regulation

As an advocate for the continuance of price fixation upon essential commodities after the war is won, Dr. Charles Richard Van Hise, president of the university of Wisconsin, Madison, and an eminent geologist, has recently appeared before numerous large commercial organizations in the middle west. In a recent address before the Milwaukee association of commerce, on the subject, "Government Control of Industries During the War," Dr. Van Hise said in part:

The war industries board has a delicate task in so fixing prices as to assure a large production without increasing prices to an unreasonable point. With liberal prices there is a strong incentive to increased producton. If the price of a commodity is placed high, the production might be still further slightly increased; but this final increment would not compensate for the higher price to the public. It is certain that, following the war, combination abroad will be general. In advocating the continuance of price-regulation after the war, I do not mean to imply that all the existing measures shall be retained in their present forms. It is yet too early to suggest a program in regard to the extent to which this should be done. What I am advocating is that we maintain the principle that the essential commodities are subject to control in the public interest precisely as are the utilities.

Convention Dates Decided

Dates for the fall convention of the National Machine Tool Builders' association, have been settled. The meeting will take place on Thursday and Friday, Nov. 7 and 8, at the Hotel Astor, New York city.

Manganese Discovered on Vancouver Island

The discovery of manganese on Vancouver island, British Columbia, is being hailed on the Pacific coast as one of the most notable finds of minerals in Canada. Mineralogists say the property near Cowichan lake is one of the finest prospects ever uncovered. The first deposit was found in the vicinity of Shaw creek near the upper end of Cowichan lake, Vancouver island. Assays showed a 65 per cent content of metallic manganese, free from phosphorus and containing not more than 10 to 12 per cent silica. Another deposit was found in the divide between the Cowichan and Chemainus rivers, at a point readily accessible by aerial tramway of the Cowichan branch of the Esquimalt and Nainamo railroad.

Complete Schedule of New Prices on Wire Rope

STANDARD COMMERCIAL WIRE ROPE.

Discounts or additions applying to Standard Lists.

(Official Prices Established by War Industries Board, August 28, 1918)

EASTERN TERRITORY.

Territory east of the western line of Missouri, Minnesota, Iowa, Arkansas and Louisiana and including points on either bank of the Missouri River between Sioux City and Kansas City, Mo.

Any point on West Side—not actually on the bank of River—shall be considered to be in Western Territory.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	30%	30-5%-5	30-10-5%
Bright Extra Strong	30%	30-5%-5	30-10-5%
Bright Cast Steel	17%-5	17%-5%-5	17%-10-5%
Bright Iron and Iron Plow	List.	7%-5	10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 17%-5	Plow 35%	List.
Galvanized Golf Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 19 Hawsers	5%-5	5%-7%-5	7%-10-5%
Galvanized 6 x 19 Running Ropes			
Galvanized Mast Arm			

When ropes are made with wire center, add 10% to list price per foot.

DELIVERY.

Freight allowed to railroad station nearest point of destination, on all shipments weighing over 500 pounds; 100 pounds and under f. o. b. cars shipping point.

WESTERN TERRITORY.

States of North Dakota, South Dakota, Nebraska, Kansas, (excepting portion on Missouri River between Sioux City and Kansas City), Texas, Oklahoma.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	37%-5	37%-5%-5	37%-10-5%
Bright Extra Strong	37%-5	37%-5%-5	37%-10-5%
Bright Cast Steel	25-5	25-5%-5	25-10-5%
Bright Iron and Iron Plow	Plow 21%-5	Plow 21%-5 less 10-5%	Plow 21%-5 less 10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 25%	Plow 25%-5 less 7½-5	Plow 25% less 10-5%
Galvanized 6 x 37 Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 12 Hawsers	List.	7½-5	10-5%
Galvanized 6 x 12 Running Ropes			
Galvanized Mast Arm			

When ropes are made with wire center, add 10% to list price per foot.

DELIVERY.

Freight allowed to railroad station nearest point of destination, on all shipments weighing over 500 pounds; 100 pounds and under f. o. b. cars shipping point.

WYOMING, NEW MEXICO AND COLORADO TERRITORY.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	30-5	30-5%-5	30-10-5%
Bright Extra Strong	30-5	30-5%-5	30-10-5%
Bright Cast Steel	17%-5	17%-5%-5	17%-10-5%
Bright Iron and Iron Plow	Plow 25	Plow 25%-5 less 10-5%	Plow 25%-5 less 10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 25%-5	Plow 25%-5 less 7½-5	Plow 25%-5 less 10-5%
Galvanized 6 x 37 Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 12 Hawsers	Plow 25-5	Plow 25-5 less 7½-5	Plow 25-5 less 10-5%
Galvanized 6 x 12 Running Rope			
Galvanized Mast Arm			

When ropes are made with wire center add 10% to list price per foot.

DELIVERY.

Delivery on shipments weighing over 500 pounds as below

WYOMING—Freight allowed to Cheyenne only.

NEW MEXICO—Freight allowed to Trinidad or to Colorado "common points" only.

COLORADO—Freight allowed to Denver and "common points" only.

500 pounds and under, f. o. b. cars shipping point.

MONTANA, IDAHO AND UTAH.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	30-5	30-5%-5	30-10-5%
Bright Extra Strong	30-5	30-5%-5	30-10-5%
Bright Cast Steel	17%-5	17%-5%-5	17%-10-5%
Bright Iron and Iron Plow	Plow 25%	Plow 25% less 10-5%	Plow 25% less 10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 37%-5	Plow 37%-5 less 7½-5	Plow 37%-5 less 10-5%
Galvanized 6 x 37 Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 19 Hawsers	Plow 27%-5	Plow 27%-5 less 7½-5	Plow 27%-5 less 10-5%
Galvanized 6 x 19 Running Ropes			
Galvanized Mast Arm			

When ropes are made with wire center add 10% to list price per foot.

DELIVERY.

Delivery on shipments weighing over 500 pounds as below

MONTANA—Freight allowed to Butte only.

IDAHO—Freight allowed to Salt Lake City or Spokane.

UTAH—Freight allowed to Salt Lake City.

500 pounds and under f. o. b. cars shipping point.

CALIFORNIA, OREGON, NEVADA AND WASHINGTON TERRITORY.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	30-5	30-5%-5	30-10-5%
Bright Extra Strong	30-5	30-5%-5	30-10-5%
Bright Cast Steel	17%-5	17%-5%-5	17%-10-5%
Bright Iron and Iron Plow	Plow 25	Plow 25% less 10-5%	Plow 25% less 10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 37%-5	Plow 37%-5 less 7½-5	Plow 37%-5 less 10-5%
Galvanized 6 x 37 Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 12 Hawsers	Plow 27%-5	Plow 27%-5 less 7½-5	Plow 27%-5 less 10-5%
Galvanized 6 x 12 Running Ropes			
Galvanized Mast Arm			

When ropes are made with wire center add 10% to list price per foot.

DELIVERY.

Delivery on shipments weighing over 500 lbs. as below

California, Oregon, Washington, Nevada.—Delivery allowed to the following points: San Francisco, Los Angeles, Portland, Seattle, Tacoma, Port Blakely, Aberdeen, Hoquiam and Cosmopolis.

If free delivery is made in Spokane, discount shall be 7½ less 500 lbs. and under f. o. b. cars shipping point.

ARIZONA.

GRADE.	CONSUMER.	DEALER.	Primary Prices Agents and U. S. Gov't.
Bright Plough Steel	30-5	30-5%-5	30-10-5%
Bright Extra Strong	30-5	30-5%-5	30-10-5%
Bright Cast Steel	17%-5	17%-5%-5	17%-10-5%
Bright Iron and Iron Plow	Plow 25%	Plow 25% less 10-5%	Plow 25% less 10-5%

(For above ropes when furnished galvanized add 10% to list, and apply discount 7½ points less than for Bright Rope.)

Galvanized Iron Rigging and Guy Rope	Plow 37%-5	Plow 37%-5 less 7½-5	Plow 37%-5 less 10-5%
Galvanized 6 x 37 Hawsers			
Galvanized Cast Steel Rigging and Guy Rope			
Galvanized 6 x 24 Mooring Lines			
Galvanized 6 x 12 Hawsers	Plow 27%-5	Plow 27%-5 less 7½-5	Plow 27%-5 less 10-5%
Galvanized 6 x 12 Running Ropes			
Galvanized Mast Arm			

When ropes are made with wire center, add 10% to list price per foot.

DELIVERY.

Freight allowed to any railroad station on all shipments weighing over 500 pounds. 500 pounds and under f. o. b. cars shipping point.

SPECIAL PRICES FOR ODD ROPES.

Any Rope containing more than one grade of wire will be sold at the price of the highest grade of wire used in making the Rope. When Rope of a size other than those in list is called for, price to be that for next largest size in list.

Where a strength higher than Cast Steel is asked for, but below that for Extra Strong Cast Steel, the price shall be based upon the list for Extra Strong Cast Steel, and where a greater strength than Extra Strong is asked for, but below Plow Steel, the price shall be based upon Plow Steel; and where a greater strength than Plow Steel is asked for, the price shall be based upon the lists for Special Steel Ropes.

TERMS OF SALE.

Sixty days net, 2% discount for cash within ten days from date of invoice.

AGENTS SERVICE CHARGE.

An Agent or Dealer of a wire rope manufacturer, on shipments direct from the manufacturer to the Consumer, will invoice at the established schedule prices of the manufacturer.

An agent or dealer may charge the consumer an additional 5% for the service of handling a reel of rope from his (Agent's) stock, or 10% in the event of his being obliged to cut a specified length of rope from his stock.

No Agent or Dealer should sell to another Agent, Dealer or Broker without the proper assurance that the Consumer, to whom the rope will eventually go, will not be charged on a higher basis than the prices herein.

NEW WIRE ROPE SCHEDULE RECENTLY ANNOUNCED BY AMERICAN IRON AND STEEL INSTITUTE AND MADE EFFECTIVE AUG. 28

Shell Program Interests Tool Men

Plant Conversion for Production of Semisteel Shells in Vast Quantities Awaits Definite Advice from Washington—Machine Tool Requirements to be Large—Neville Island's Crane Needs Increased—Miscellaneous Inquiry Maintained

ALL machine tool districts await with keen interest, definite advice from Washington as to the government's action on its semisteel shell program. Approximately 33,000,000 3, 4.7, 6 and 8-inch shells will be ordered and a large proportion of them are to be machined all over. This will present large tool needs including some special lathes. Many feelers are out for equipment originating in users who are figuring on government contracts, supposedly shell work. While it is expected that most of this business will be placed in the middle west, eastern manufacturers will probably get a share. One New England manufacturer is inquiring for equipment to turn out 155-millimeter shells and a report has it that large orders for Stokes cast iron trench mortars will be placed in the east.

Additional orders have been placed by the department of military railways for shipments to France and it is thought that buying on its large list is now completed. Railroad buying continues intermittently, the Pennsylvania issuing the largest inquiries for its shops at Columbus, and elsewhere. The New York Central has found it necessary to curtail its expenditures. In many cases between the time the estimates are filed with specifications and the time the order is placed, one or two advances have increased the price so that its appropriation is no longer sufficiently large for its requirements.

Small miscellaneous inquiry seems to be the rule in all markets. One item of interest to Cleveland dealers is the inquiry for approximately 70 machines from the Liberty Motor Co., Detroit, and a smaller inquiry from the Peters Cartridge Co., Cincinnati. The Kohler Co., Kohler, Wis., has sent an inquiry to Chicago dealers for approximately $100,000 worth of equipment. The American Brake Shoe & Foundry Co., desires about $1,000,000 worth of tools for its Erie shops.

An average of 2800 pistols daily is the expected output of the Winchester Repeating Arms Co., the Burrows Adding Machine Co., the National Cash Register Co., and the Ross Rifle Mfg. Co. It is expected that additional equipment will be needed in some of these plants.

So great has the government's need for locomotive cranes become that agents are scouring the market for second-hand cranes for several departments, the navy department wants 18 and another requires three. Further orders have been placed by the Bethlehem Shipbuilding Corp., for six overhead, 12 wall and 23 5-ton cranes for Alameda, one 10-ton for Sparrows Point and two 25-ton overhead for the Bethlehem forge shop at South Bethlehem. The crane specifications for the Neville Island ordnance plant have been revised and it is estimated that between 150 and 200 cranes will be needed. Another lot of 10-ton cranes in addition to the 48 of that size originally specified, will be needed. The new specifications include 20 and 30-ton cranes. The exact number is not divulged at the present time.

Revised Crane List for Neville Island is Issued

BUYING of miscellaneous equipment, which has been of steadily increasing volume during the past two weeks, continues to dominate activity in the eastern machine tool market. Orders are for single tools principally, but are of sufficient number to make for a considerable amount of business. The continued paucity of large inquiries is attributed chiefly to the policy of the government in placing much of the work now coming up with manufacturers of the middle west and Ontario. This policy, at present, is reflected particularly by the various inquiries coming from these districts for equipment for manufacturing shells. That the East will in all probability share in this new business to some extent, however, is further indicated this week by an inquiry from a New England manufacturer for machinery for turning out 155-millimeter shells, and also by reports that additional contracts are to be placed shortly in this district for producing the Stokes cast iron trench mortars.

The director of military railways, by the placing of additional orders this week, is believed to have now fully covered on the large list issued several weeks ago. The equipment is all for shipment to France. Other buying for export included some miscellaneous tools for South America. The railroads continue active. The largest inquiry from these interests is that of the Pennsylvania Lines West, involving approximately $150,000 worth of machine tools for shops at Columbus, O., Indianapolis and Fort Wayne, Ind. Aside from this, railroad demand consists of relatively small inquiries. The Reading-Standard Co., Reading, Pa., manufacturer of motorcycles, is buying against a small list. Included in other buying is an order for 10 hand screw machines for use in the manufacture of gun sights and an order for several precision bench lathes by an optical concern for the manufacture of periscopes. The Midvale Steel & Ordnance Co. is expected to issue an inquiry shortly for some additional equipment for its rifle plant at Eddystone, Pa. Prices on machine tools generally continue steady, although an advance has gone into effect

AGATHON Alloy STEELS

The ancient tripod with its elusive wavering flame symbolized the eternal truth that perfection is for all people and for every age.

Perfection in every operation, from the moment the crude material enters the open-hearth till the finished product leaves our plant, has been our ideal from the very day this steel plant was conceived.

Every buyer wants the best

Agathon Chrome Nickel
Agathon Chrome Vanadium
Agathon Nickel Steel
Agathon Special Analyses
Agathon Vanadium
Agathon Chrome Steel
Agathon High Carbon

The Central Steel Company
Massillon, Ohio

SALES OFFICES:
Detroit Office—326-27-28 Ford Bldg., F. Walter Guibert, District Rep.
Cleveland Office—Hickox Bldg., The Hamill-Hickox Company, District Rep.
Chicago Office—1370 People's Gas Bldg., 122 S. Michigan Blvd., C. H. Beach, District Sales Mgr.
Philadelphia Office—633 Widener Bldg., Frank Wallace, District Sales Mgr.
Syracuse Office—621 University Block, T. B. Davies, District Sales Mgr.
J. E. Dockendorff & Co., 20 Broad St., New York, General Export Agents.

this week of 5 per cent on a line of shapers and 10 per cent on small dry grinders.

Several contracts for the manufacture of pistols have been placed by the government, the Winchester Repeating Arms Co., New Haven, Conn., being one of the companies to receive such an order in the East. The Burrows Adding Machine Co., Detroit, the National Cash Register Co., Dayton, O., and the Ross Rifle Mfg. Co., of Canada, have also received contracts calling for a combined output of about 2800 pistols daily.

Government officials have been scouring the market during the past few days for second-hand locomotive cranes. Owing to the sold-up condition of builders, the government has been taking this measure in an effort to obtain immediate delivery. One department is in the market for 18 cranes of 15 and 20 tons capacity, and another, the navy department, is inquiring for three locomotive cranes of 10, 20 and 30 tons, respectively. These inquiries, however, do not necessarily represent the total requirements of the government, for it is understood to be in the market through one department or another for every available locomotive crane offered for nearby shipment. The Bethlehem Shipbuilding Corp. has placed further large orders for electric cranes. These include two 15-ton, two 10-ton and two 5-ton overhead cranes and 12 wall cranes of three tons capacity each, all of which went to the Milwaukee Electric Crane & Mfg. Co., Milwaukee, and twenty-three 5-ton, 2-motor cranes, of 8-foot span, awarded to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. These cranes are for the yard at Alameda, Cal. In addition, a 10-ton overhead was placed with the Milwaukee company for delivery to Sparrows Point, Md. The Bethlehem Steel Co. also purchased two 25-ton overhead cranes from the same company for a forge shop at South Bethlehem, Pa. Included in the few new inquiries of the past week is a 15-ton overhead crane, 62-foot span, for the Pennsylvania railroad.

Chicago Market is Steady

BUSINESS in Chicago machine tool lines continues steady, without feature, and without large inquiries. General users appear to be buying only sufficient to fill in their equipment where changes are necessary to accommodate altered output made necessary by war work. Second hand equipment is difficult to obtain, the better sort apparently having been picked up and put into active service. Prices are high for this class of machines. Most buyers prefer new machines but will take used equipment where it is available with promptness, rather than wait for late delivery. Most manufacturers are from three to six months behind. Prices are being increased steadily, usually in 10 per cent jumps. The Kohler Co., Kohler, Wis., has just bought about $100,000 worth of equipment to provide facilities for added output.

Liberty Motor Wants 70 Machines

SMALL inquiry in the Cleveland market is plentiful. This comprises requests for lots of one, two and three machines mostly, although among the requests for equipment by the Glen L. Martin Co., Cleveland, manufacturer of airplanes, is one for four No. 2 plain milling machines. The only sizable inquiry, outside of one for a lot of miscellaneous equipment from the Peters Cartridge Co., Cincinnati, is one for about 70 machines from the Liberty Motor Co., Detroit, including lathes, planers, drills, etc. Several other inquiries have been received from Cincinnati and Michigan users. The Maxwell Motor Corp., Detroit, purchased among other equipment one heavy duty drill and is expected to come into the market for equipment for its Dayton, O., plant. The American Brake Shoe & Foundry Co., Erie, Pa., has been buying against a large list and is expected to issue a second list shortly. The National Lamp Works of the General Electric Co., has bought a few machines and is looking for radial drills, heavy duty drills, keyseaters, etc. The American Clay Machinery Co., Willoughby, O., is in the market for one 3½-foot radial drill. The Dan Products Corp., Cleveland, desires one sintering machine.

Several users are inquiring for equipment for government work, the nature of which is not divulged. It is thought that this is shell work, since the inquiries are for lathes, planers, presses, etc. That a vast amount of equipment will be required by machine shops, etc., when the government distributes its orders for 33,000,000 semisteel shells is the expectation of several Cleveland dealers, since a large proportion of the shells are to be machined all over and machine shop facilities will be taxed to the utmost to keep pace with foundry production.

Railroad buying is not extensive, although the Pennsylvania is still issuing many inquiries. It desires for its Columbus shop, one No. 5 universal high-power milling machine, one 20-inch high-speed, adjustable head, vertical drill press, two 20-inch by 8-foot heavy duty engine lathes, one 25-inch heavy duty engine lathe, 12 feet between centers, one 25-inch same, six feet between centers, one 30-inch same, seven feet between centers, one horizontal cylinder boring machine, one double-headed frame slotting machine, 24-inch stroke, 48 inches between housing, one 80-inch horizontal boring and drilling machine, one heavy duty plain radial drill press, with 6-foot arm, two 18-inch and one 10-inch slotting machines, one 42-inch vertical turret lathe, one crank pin turning machine and one portable hydraulic press for forcing crank pins in or out of wheel centers. This road also wants one high-speed power hack saw, belt driven, capacity 6-inch by 6-inch for Mosier, O., and one for Mingo Junction, O., and one 20-inch wet emery grinder, belt driven, for the latter shop. On the other hand, the New York Central has found it necessary to curtail its expenditures in buying on its large list due to the advance in price on machine tools and equipment, since the original estimates were made. This road recently endeavored to place an order for certain equipment. The purchasing agent was met with the advice that there had been a 10 per cent increase. While he was obtaining authority to issue the order at the increase, another 10 per cent increase was put into effect. Thus delays in placing orders, are proving costly.

Revised Neville Island Crane List Issued

NEW revised specifications have been issued for cranes for the Neville Island ordnance plant. The new lists include another lot of 10-ton cranes in addition to the 48 of this size, contracts for which as yet have not been awarded. Bids also are asked on 20 and 30-ton cranes, but the number asked for in these sizes and for the additional lot of 10-ton cranes is carefully guarded. It has been estimated that altogether between 150 and 200 cranes will be required for the plant. Bids on the forty-eight 10-ton have gone to New York, where after examination, instructions will be sent to Pittsburgh as to awards. Nothing important has developed in connection with the efforts of the ordnance department to secure 33,000,000 semisteel shells. Only a few plants in this district have started preparations for taking any of this business and demands for machine tools in connection with it seem to await more definite information as to what plant conversion will be necessary. The American Brake Shoe & Foundry Co. is reported to be in the market for $1,000,000 worth of machinery and tools for its Erie, Pa., plant.

SPEEDING with ROLLING MILL JIM

Say Fellows! you remember the first of March I told you the "Hubbard" broke ground for a new foundry? Well here's a picture of her, she started with a BANG, June 3rd. Just 93 days! She has ***some*** up-to-date equipment in her, installed by ***some speed artists,*** I'll say: electric furnace, open hearth furnace and all that swell stuff. Pike her off for yourself!

So long,

Rolling Mill Jim.

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

RUTLAND, VT.—The Rutland railroad has let the contract for a 50-foot high, 105x263-foot locomotive shop, 125x172-foot coach repair shop, two 75x186-foot and 45x209-foot transfer tables and a brick, 2-story, 35x50-foot office building.

BEVERLY, MASS.—The Beverly Building association has let the contract for a brick, 3-story, 200 x 500-foot factory building on River street.

BOSTON.—The Aqua-Thermos Motor Co. has been incorporated to make machinery with $96,000 capital by Oliver A. Wyman, H. E. Harrington, Somerville, Mass., and H. G. O'Connor.

BOSTON.—The West India Copper Co. has been incorporated with $25,000 capital by William N. Ambler, Medford, Mass., Ralph L. Williams, Danvers, Mass., and Chester McQuaid.

EAST BOSTON, MASS.—The Boston & Lockport Block Co. has purchased 118,000 square feet of land on Condor street and will erect a modern factory building.

LOWELL, MASS.—The Tremont & Suffolk Mills is building a 1-story, 180x335-foot addition, to cost $100,000.

MARLBORO, MASS.—The Koehler Mfg. Co. will receive bids shortly for a $20,000 power plant. A $30,000 factory also will be erected.

NEW BEDFORD, MASS.—The Taunton-New Bedford Copper Co. has let the contract for a brick, 1-story, 30 x 50-foot addition to its factory.

TAUNTON, MASS.—The Nelson Machine Co. has been incorporated to operate a foundry and machine shop with $300,000 capital by A. H. Nelson, Boston, E. B. Simmerman, Boston, and Arthur P. Stone, Belmont, Mass.

WORCESTER, Mass.—The Spencer Wire Co. has let the contract for a 40x100-foot addition.

WORCESTER, MASS.—The Worcester Woolen Mill Co. has let the contract fo a 2-story, 40x190-foot storage building.

WORCESTER, MASS.—The Edgeworth Mill has let the contract for a brick, mill construction, 1-story, 54 x 134-foot addition.

HARTFORD, CONN.—A $30,000 addition will be erected by the Ainslie Machine Tool Works. According to plans by Greenwood & Noerr, the new structure will be one story, 50 x 105 feet.

NEW HAVEN, CONN.—The Eastern Machine Screw Co. will start work at once on the construction of a 1-story, 55 x 80 and 55 x 85-foot factory building.

NEW HAVEN, CONN.—Plans for the erection of a large addition to the plant of the Winchester Repeating Arms Co. are awaiting the approval of the government. It is understood the capacity of the plant will be practically doubled.

NEW LONDON, CONN.—Bids close Sept. 30, for a foundry and sheet metal shop for the navy department at the submarine base, to cost $105,400.

WATERBURY, CONN.—Fire in the brick 4-story building occupied by the Lux Clock Mfg. Co. caused damage between $100,000 and $125,000.

WATERBURY, CONN.—Work will be started shortly by the Waterbury Button Co. on the erection of a 3-story mill addition. J. R. Smith is president and treasurer of the company.

WATERBURY, CONN.—Bids now are being received by the Chase Metal Co. for the erection of a $40,000 brass mill. The proposed structure will be one story, 40 x 320 feet.

Along the Middle Atlantic Seaboard

ALBANY, N. Y.—Plans have been placed in abeyance by George H. Thatcher & Co. for the erection of a proposed $15,000 machine shop addition.

BINGHAMTON, N. Y.—A foundry is being contemplated by the Fairbanks Co.

BUFFALO.—The Automatic Transportation Co. will build a 3-story plant here, to cost $40,000.

BUFFALO.—The Atlas Steel Car Co. has let the contract for a 1-story plant, 60 x 200 feet.

BUFFALO.—The J. P. Devine Co. will build a storage and factory building at its plant on Clinton street.

BUFFALO.—Plans have been completed by the Lumen Bearing Co. for a $15,000 foundry. The proposed building will be one story, 60 x 99 feet.

BUFFALO.—The Buffalo Airplane Corp., 885 Niagara street, is having plans drawn for a 1-story, 100 x 130-foot factory building.

BUFFALO.—The New York Car Wheel Co. has awarded the contract to the Schaff Co. for constructing a $30,000 plant addition. The new structure will be one story, 58 x 158 feet.

LONG ISLAND CITY, L. I.—A -story, 100 x 315-foot factory building will be erected by H. S. Karp. E. E. Seelye, 101 Park avenue, New York City, is drawing plans.

OGDENSBURG, N. Y.—A $30,000 coaling plant will be erected here by the New York Central railroad. B. C. Martin, Albany, N. Y., is in charge.

MERCER, PA.—The Mercer Gas & Water Co. is making extensive improvements.

Unload Cars Quickly

FROM the machine tool section war industries board, of which G. E. Merryweather, president of the Motch & Merryweather Machinery Co., Cleveland, is chief, comes the request that all cars be unloaded with the greatest possible degree of speed. This request reads as follows:

"The railroad administration calls attention to the fact that between now and cold weather, with its inevitable effect upon the movement of freight, the greatest possible tonnage should be moved; the utmost expedition should be insisted upon in the unloading of cars and everything possible done to avoid a repetition of the vicissitudes of last winter."

ROCHESTER, N. Y.—The Bridgeport Tool & Machine Works is receiving bids for a 1 and 2-story plant addition. The new building will be 156 x 275 feet. Robert S. Buyers is architect.

AVIS, PA.—The New York Central railroad is taking bids for an addition to its shops here.

BEAVER BROOK, PA.—The C. N. Dodson Coal Co. will install electric equipment soon.

BEDFORD, PA.—The Tile Water Pipe Co. will build a 3-story machine shop addition to cost $15,000.

BELLEFONTE, PA.—The Titian Metal Co. will build a 1-story addition, 60 x 100 feet.

BETHLEHEM, PA.—The Bethlehem Steel Corp. is taking bids on a 3-story building, 272 x 1150 feet.

CORRY, PA.—The Tionen Refinery is being rebuilt at Clarendon, Pa., near here, at a cost of $500,000.

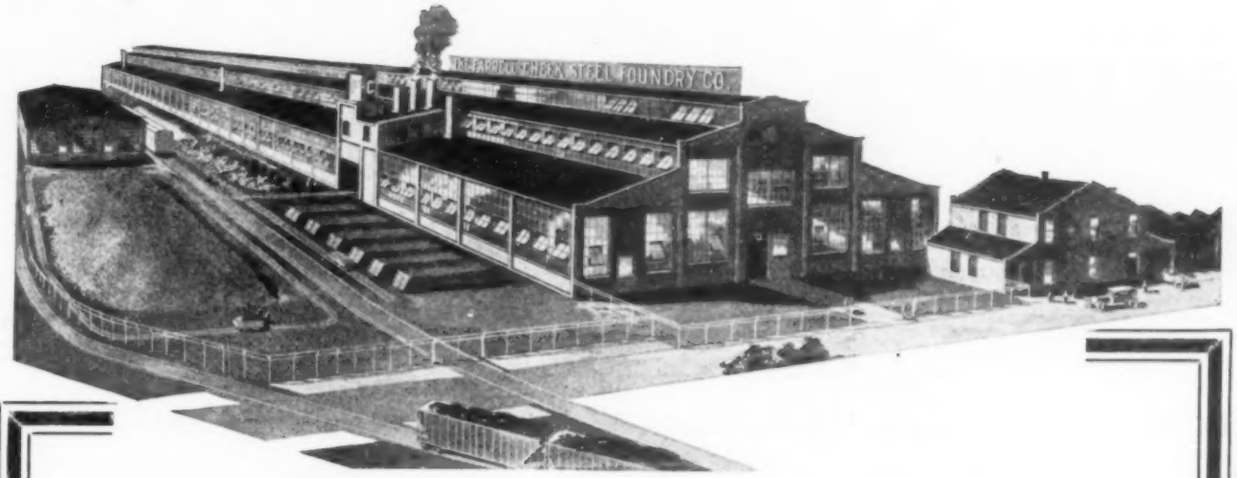
CORRY, PA.—The Standard Turnbuckle Co. will build another addition to its plant, 60 x 200 feet. Elmer McElroy is the company's construction superintendent.

GREENVILLE, PA.—The Greenville Mfg. Co. will build a new plant here.

HILLSVILLE, PA.—The Carbon Limestone Co. will build an addition to its plant here.

MEADVILLE, PA.—William M. Thompson will fit up a plant at Liberty avenue and N street for a machine shop.

MERCER, PA.—The Petroleum Iron Works, Sharon, Pa., will make extensions to its shops here.



A Plant That Has Grown Steadily and Consistently

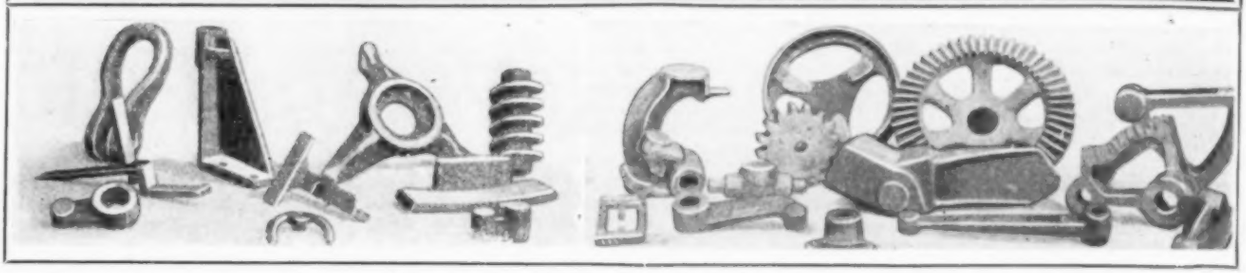
Growth generally denotes nourishment—and the nourishment that has given us our growth has come from our ability to successfully turn out all that we have undertaken to the entire satisfaction of both the buyer and seller.

Tractor Manufacturers, Automobile Manufacturers, Machine Too Manufacturers are the class of shops we are serving. They find that they can ***rely absolutely on Farrell-Cheek Small Steel Castings.***

Tell us about your needs and let us make quotations and delivery dates. Write fully and at once.

Farrell-Cheek Steel Foundry Co.

SANDUSKY, OHIO



MONNESSEN, PA.—This borough contemplates building an incinerating plant.

NEW CASTLE, PA.—The Standard Steel Car Co., Mahoning avenue, has let the contract to the Hughes Folkrod Co., Commonwealth building, Philadelphia, for an addition 100 x 510 feet.

PHILADELPHIA.—B. F. Buoyer & Co., Camden, N. J., will build a warehouse, 72 x 105 feet.

PHILADELPHIA.—The Kensington Mfg. Co. is receiving bids on a 2-story warehouse, 74 x 100 feet. F. N. Greisler is architect.

PHILADELPHIA.—The new plate and angle shop and power house of the New York Shipbuilding Co., Camden, N. J., was recently damaged by fire, the loss being estimated at $150,000.

PHILADELPHIA.—Approximately 14 acres have been purchased here by the government and it is understood the property will be used for the erection of a large gun plant.

PITCAIRN, PA.—The Pennsylvania railroad will build a machine shop and engine house, storage house and ice house here.

PITTSBURGH.—The Pittsburgh Mining Machinery Co. is preparing plans for a machine shop.

PITTSBURGH.—The American Locomotive Works will erect an addition to its plant on the North Side.

PITTSBURGH.—The American Railway Express Co. has completed plans for a garage and warehouse at Second avenue and Try street.

POTTSTOWN, PA.—The Vaughan Knitting Co. will build a factory, 60 x 140 feet.

PRIMOS, PA.—The Primos Chemical Co. will build a 1-story plant, 37 x 62 feet, from plans by Puckert & Wunder, Philadelphia.

SHARON, PA.—The Sharon Waterworks Co. will build additions to its filtration plant soon.

SHARON, PA.—Engineer Philip Hurger will supervise the installation of a 5,000,000-gallon waterworks pump.

SHARPSVILE, PA.—The Sharpsville Boiler Works has broken ground for an addition.

WARREN, PA.—J. C. Kubler, Union Petroleum Co., has charge of building an oil refinery here.

WASHINGTON, PA.—The Greensburg Gas Co. will build a pumping station here.

WILLIAMSPORT, PA.—The Williamsport Wire Rope Co. has let the contract to the Austin Co., Cleveland, for the erection of a warehouse 90 x 200 feet.

Activities in the Central States

KENOSHA, WIS.—The Kenosha school board has extended the time for closing bids for the erection of the new $150,000 Washington school until Sept. 27. Architect John D. Chubb, Chicago, is supervising the project.

KENOSHA, WIS.—A 1-story office building, 50x75 feet, of fireproof construction, will be erected by the Winther Motor Truck Co. in connection with its new plant now being completed in Kenosha. The entire project will cost $150,000. The Winther company at present is located at Winthrop Harbor, Ill., just south of Kenosha.

LADYSMITH, WIS.—Articles of incorporation have been filed in behalf of the Rusco Electric Products Co., Ladysmith, Rusk county. The capital stock is $10,000.

MADISON, WIS.—John F. Icke, Madison, is lowest bidder for constructing a reinforced concrete and steel bridge over Starkweather creek at Milwaukee avenue, the price being $4900.

MILWAUKEE—Articles of incorporation have been filed by the Newton Co. with a capital stock of $50,000, to engage in the business of mechanical, electrical, civil and mining engineering. G. S. Salentine and M. W. Lange are the incorporators.

MILWAUKEE—Van Ryn & DeGelleke, architects, Caswell block, will take bids about Oct. 10 for the erection of the superstructure of the first unit of the new Central Continuation school. The units will be four stories, 80x265 feet. W. C. Sieker is superintendent.

DETROIT.—The Edmunds & Jones Mfg. Co., George E. Edmunds president, will erect a 1-story factory addition.

DETROIT.—The Welded Steel Barrel Corp. will build a 1-story factory building. Smith, Hinchman & Grylls, Washington arcade, are the engineers.

DETROIT.—The Cubeco Steel Foundry Co. has been organized with a capital of $200,000. Uzal H. Struble, George R. Cruls and H. L. Bartram are the incorporators.

DETROIT.—The Hoskins Mfg. Co., manufacturer of furnaces, A. B. Tilton secretary, will build a 2-story factory addition and a 1-story addition to its foundry. The Whitehead & Kales Iron Works has the steel contract.

DETROIT.—The Essex Brass Corp., 480 Franklin street, has been incorporated to manufacture oilers, grease cups and a general line of brass goods for the automotive trade. Edwin C. Nagel, Michigan Lubricator Co.; Louis A. Danziger, Detroit Smelting Co., and J. H. Qualman are the principal stockholders.

GRAND RAPIDS, MICH.—The Litscher Lite Corp. has been organized with $100,000 capital to manufacture power and light plants for farms. C. J. Litscher is president.

JACKSON, MICH.—The Briscoe Motor Car Corp. will increase its facilities for war work by taking over the building of the Hackett Motor Car Co.

MANISTEE, MICH.—The Manistee Shipyard Co. is installing $75,000 worth of new equipment.

New Business in Canada

ESQUIMALT, B. C.—The Esquimalt Ship Co. has a site of 44 acres and will begin at once the erection of a large shipbuilding plant.

PRINCE RUPERT, B. C.—A. Ludgate will build a sawmill with a capacity of 40,000 feet a day at a cost of $60,000.

VANCOUVER, B. C.—Harrison & Lambert, 744 Hastings avenue west, are having plans prepared for the erection of a workshop and machine shop, to cost about $60,000.

VANCOUVER, B. C.—The University of British Columbia, Tenth avenue and Laurel street, will build an automobile machine shop, to cost $6500, and will require machinery and equipment.

VICTORIA, B. C.—The Cameron Lumber Co., Garbally road, is having plans prepared for the erection of a fuel plant, to cost $40,000. J. O. Cameron is manager.

DUNVILLE, ONT.—The Haldimand Machine Co., Ltd., has ben incorporated to carry on a general foundry and machine shop business, with $40,000 capital, by George H. Orme, Thomas J. McCutcheon, Robert Bradford and others.

OTTAWA, ONT.—McMullen & Armstrong, Slater street, will build a 1-story machine shop, and have let the contract to J. & C. Low, 358 Lisgar street, to cost about $60,000.

TORONTO, ONT.—Sanderson-Pearcy Co., 86 Adelaide street west, will build a 1-story addition to its paint factory, to cost $15,000.

TORONTO, ONT.—The Corrugated Paper Box Co., 187 Geary avenue, is clearing a site for the erection of an addition to its plant, to cost $10,000. J. S. A. Wheatley is manager.

HALIFAX, N. S.—The machine shop, dock pumping house, boiler house, and air compressor building of the Halifax Drydock & Shipyards, Ltd., were damaged by fire Sept. 14, with a loss of $60,000. The buildings will be rebuilt immediately and new machinery installed.

WHYCOCOMAGH, N. S.—Wells & Gray, Ltd., 701 Confederation Life building, Toronto, Ont., have the contract for the erection of a fire brick factory for an American syndicate, to cost $150,000. Construction work will be started at once.

CAP DE LA MADELEINE, QUE.—Plans are being prepared for the installation of a heating system for the St. Maurice Paper Co., to cost $12,000. J. W. Winton is manager.

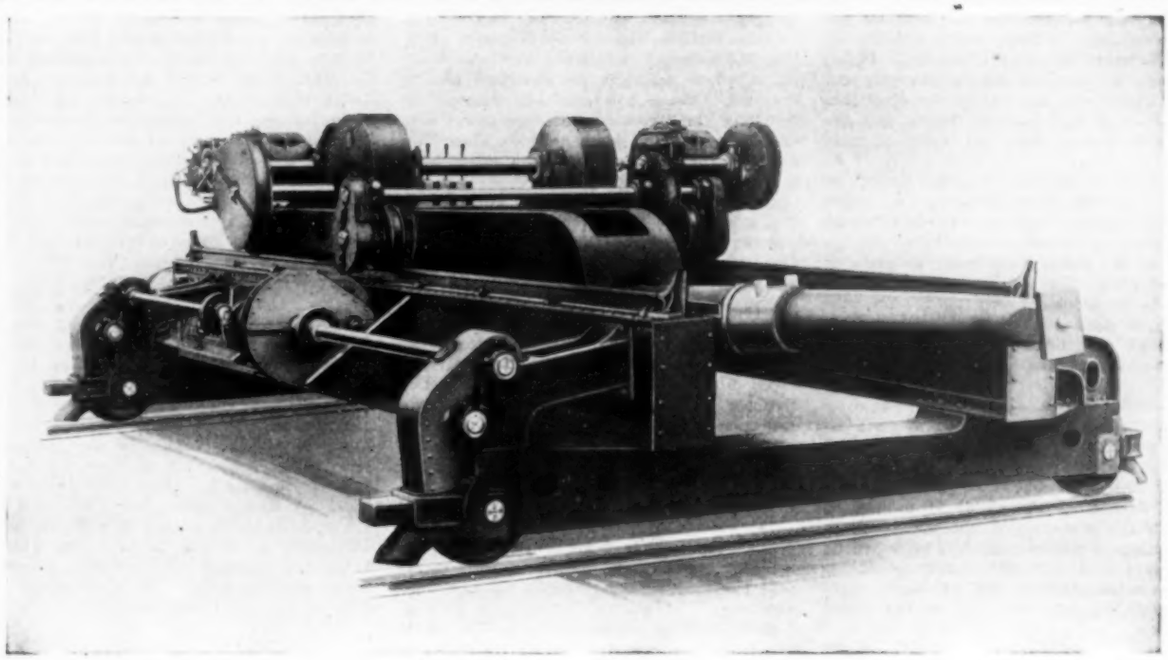
MONTREAL, QUE.—The Canadian Pacific Railway Co., Windsor station, has started work on rebuilding its factory and machine shop, recently damaged by fire with a loss of $10,000. A. K. Cameron is manager.

MONTREAL, QUE.—Contracts have been awarded for the erection of an addition to the plant of the Montreal Locomotive Works, 145 St. James street, to cost $35,000. Work will be started immediately.

MONTREAL—The Canada Chemical Works Co., Ltd., has been incorporated to manufacture explosives, chemicals, cement, etc., with $50,000 capital stock, by Raoul O. Grothe, Joseph P. Provost, Hector F. Fortier and others.

MONTREAL—F. E. Smith, Ltd., has been incorporated to manufacture machinery and to build boats, ships, etc., with $20,000 capital stock, by George V. Cousins, Egbert W. Westover, both of Montreal; Charles M. Cotton of Westmount, Que., and others.

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Charging Machines

The Wellman-Seaver-Morgan Company originated, first built, developed, and for many years was the sole constructor of mechanical chargers for open hearth furnaces.

The W-S-M Low Type Charger is pictured above. Some conditions indicate the use of the High Type Charger or the Crane Type.

We are prepared to build a special machine for your particular requirements.

Bulletin A 7, "W-S-M Charging Machines and Manipulators," will be sent on request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

New Trade Publications

BEARING METAL.—An attractive booklet containing a treatise on a bearing metal composed of an alloy of zinc, copper and aluminum was recently published by the Lumen Bearing Co., Buffalo.

PULL SWITCHES.—A 4-page envelope folder, which points out that current, copper and coal may be saved by the judicious use of pull switches, is being distributed by the Cutler-Hammer Mfg. Co., Milwaukee. Lights which are not needed can be promptly cut out of circuit with the use of these switches which have a high capacity rating and are made with various sizes and styles of caps.

DUST SYSTEMS.—A 24-page catalog issued by the Clark Dust Collecting Co., Fisher building, Chicago, illustrates and describes its dust collecting systems designed for the recovery of any solids from fumes or gases or dust laden air. This equipment is adapted to all kinds of industrial operations where the removal of dust is a menace particularly in iron, steel and brass foundries, and other metal working plants.

MACHINE TOOL CONTROL.—The General Electric Co., Schenectady, N. Y., recently published a 4-page bulletin in which magnetic control for machine tools for direct current motors is illustrated and described. Proper starting of the motor is insured by under-voltage protection of the control panel. The setting of ultimate speed is permitted by a separate field rheostat. Auxiliary devices for use with constant and adjustable speed equipment are also described in the folder.

WELDING APPARATUS:—The Davis-Bournonville Co., Jersey City, N. J., is circulating a 40-page booklet, in which oxy-acetylene welding and cutting apparatus is described and illustrated. The booklet also contains a general treatise on the science of acetylene welding. Among the apparatus described are: acetylene pressure generators, portable acetylene generator and cutting equipment, welding torches of all descriptions and automatic welding and cutting equipment.

STEEL WORKSTAND.—A 4-page pamphlet is being circulated by the New Britain Machine Co., New Britain, Conn., in which an all-steel workstand is illustrated and described. The legs of the stand are two pieces of steel, which extend across the top of the table. The stand is strengthened by a 2-inch flange along the sides and the back is supported by a formed hem. The trays are bolted to the stand by means of welded gussets. The stand may be had with either two or three trays

PNEUMATIC TOOLS.—A 4-page folder, in which pneumatic and electric tools are illustrated and described is being circulated by the Independent Pneumatic Tool Co., Chicago. Among the tools described are, reversible piston air drills; portable air grinders; turbine air drills; air hammers; scaling hammers; chipping, caulking and flue beading hammers; pneumatic sand rammers and electric drills. Tables showing the sizes and dimensions of the tools are given.

RUST PROOFING. — The Parker Rust Proof Co., Detroit, is circulating to the trade an attractive 8-page pamphlet describing a patented process of rust prevention. The process consists of a chemical bath maintained at a temperature of 212 degrees Fahr., into which articles of iron and steel are submerged after having been thoroughly cleaned. The articles are kept in the bath from 1½ to three hours. It is said the bath does not affect the dimensions, contour, ductility, temper, elasticity, etc., of the metal processed.

SOLENOIDS—The Cutler-Hammer Mfg. Co., Milwaukee, is circulating a 4-page booklet in which solenoids are described and illustrated. These solenoids are adapted for operating brakes used in connection with crane, elevator and hoist motors. They have a high sealing pull without objectionable hammer blows. The solenoids are made either shunt or series wound, the shunt winding having a protective switch to prevent overheating the coil. The booklet lists the sizes of the solenoids and gives the stroke, gross pull and other interesting data.

CONTROLLERS.—A 4-page folder illustrating and describing drum-type controllers for cranes, hoists and similar machinery is being distributed by the General Electric Co., Schenectady, N. Y. These controllers are recommended for use where the speed of motors while lowering is controlled by dynamic or electric braking. All parts of the controllers are enclosed. The folder contains a table showing the size, dimensions and power ratings of the controllers. The cylinders of the controllers are brass, which being nonmagnetic, do not distort or weaken the field produced by the magnetic blowout coils.

ELECTRICAL EQUIPMENT—The Robertson Electric Construction Co., Buffalo, is circulating a 12-page booklet, which contains illustrations of parts of the company's plant, as well as a number of electrical devices which the company has manufactured. Among the illustrations is that of a man repairing a 100-horsepower stator in the motor repair shop. Another illustration shows an electric switch board which was installed at the plant of the Pierce-Arrow Motor Car Co., Buffalo, by the Robertson company. This board is equipped with a 4000-ampere shunt and has especially designed terminals.

PYROMETERS.—The Wilson-Maeulen Co., New York, recently published an attractive 24-page catalog, illustrating and describing electric pyrometers. All accessories to the pyrometer, including recorders, thermocouples, indicators, switchboards, etc., are described. A recording dial enclosed in a glass case so as to protect it from gases, etc., is also described. The glass dome rests in a trough or moat around the base of the dial. This trough should be filled with mercury. The dome and base are rotable and the instrument swivels with them. The booklet also contains a diagram showing a 4-furnace pyrometer installation.

CONDENSERS.—The Wheeler Condenser & Engineering Co., Carteret, N. J., is circulating a 32-page booklet containing information and illustrations of condensers, pumps, cooling towers and other conlensing machinery. Large and small surface condensers, with illustrations of complete installations are fully described. Rectangular and cylindrical types of surface condensers are discussed. Other machinery described and illustrated include, jet condensers, barometric condensers, air pumps, rotative vacuum pumps, turbo-air pumps, centrifugal pumps, natural and forced draft cooling towers, feed water heaters and multiple effect evaporators and dryers.

MAGNET-OPERATED BRAKE.—A magnet-operated brake for direct current service is described and illustrated in a 4-page bulletin recently published by the Cutler-Hammer Mfg. Co., Milwaukee. Recent improvements in the design of the brake, by lowering the position of the magnet and making the magnet armature an integral part of one of the arms carrying the brake shoes, has simplified the construction. These brakes are especially applicable for use on a crane, hoist or bridge. Ratings, dimensions, engineering data, etc., are given. Standard sizes, which vary from 8 to 30 inches in diameter and from 15 to 300 horsepower capacity are also listed.

WORKMEN'S HOMES.—The Truscon Steel Co., Youngstown, O., is circulating an attractive 16-page booklet containing illustrations and descriptions of workmen's homes built of stucco and ribbed steel. Methods of construction are told in a brief and concise way. In building a house of this type, it is practical to eliminate all wood studs and joists and replace them by using pressed steel materials, the booklet points out. The steel ribs are made in sheets ranging in size from 15⅝ x 96 inches to 28 x 96 inches. The ribs or lathes are furnished in either open hearth or copper bearing steel. The booklet also contains several good diagrams of houses.

CAR DUMPERS.—An illustrated bulletin in which car dumpers are described, recently was published by the Wellman-Seaver-Morgan Co., Cleveland. These dumpers are employed for discharging the contents of open top railroad cars into boats, bins, etc., by inverting the car. The dumpers consist of a rectangular framework supporting a rotating cradle in which the loaded car is held while discharging. An automatic counterweight clamps the car to the cradle, which is inverted by the revolving mechanism. The top of the cradle forms a chute for directing the material as it flows. The dumpers are built for either steam or electric operation.

PYROMETERS. — A new direct-reading heatmeter, designed for the measurement of all temperatures within the range of either platinum or base metal thermo-couples, is fully described in an 80-page catalog just issued by the Brown Instrument Co., Philadelphia. The new features of an automatic temperature control and a complete description of an automatic signaling pyrometer are also given. A transformation-point pyrometer, which determines the transformation points of steel is illustrated. Other pyrometers and thermometers as well as the various types of platinum and base metal thermocouples and protecting tubes are described at length.

MOTORS.—A 12-page bulletin in which polyphase induction motors are described and illustrated has been published by the General Electric Co., Schenectady, N. Y. In these motors the fundamental principles of construction and design will be found in

every size, from the smallest to the largest. The motors are of simple construction and have a great overload capacity. The shafts of the rotors are of steel with double oil reflectors turned on them. The bearings are protected from dirt by a special cover. The motors can be supplied for constant or varying speed service; continuous or intermittent duty. Practically every part of the motor is described fully.

CHARGING EQUIPMENT. — A 4-page pamphlet is being circulated by the Cutler-Hammer Mfg. Co., Milwaukee, in which sectional charging equipment for miners' lamp batteries, is described and illustrated. Each unit rack will accommodate any number of lamp batteries up to 10. As many of these units may be installed together as may be required. Charging equipment and control apparatus for mine locomotives are also described. This equipment is somewhat similar to that used in the charging of industrial trucks and vehicles. An illustration and description is also given of an automatic motor-driven pump control installed in a mine 800 feet below the earth's surface.

PYROMETRY AND TEMPERATURE CONTROL:—The Leeds & Northrup Co., Philadelphia, recently issued an attractive catalog illustrating and describing electrical heat measuring instruments. The catalog also contains a treatise as to how each of the instruments operates, their usefulness, etc. Among the instruments described are:—potentiometer indicators; curve drawing recorders; multiple point recorders; temperature control apparatus; transformation point apparatus; precision potentiometers; thermocouples and optical pyrometers. The booklet is interesting and will be of great use to those looking for information on the subject of heat measuring.

INSULATING BRICK:—The loss of heat through the walls, arches, bottoms and doors of furnaces is recognized in practically every large plant in the country. This is discussed in a 4-page booklet recently issued to the trade by the Armstrong Cork & Insulation Co., Pittsburgh. The necessity of properly insulating furnaces with insulating brick and the resulting conservation of fuel and heat, is pointed out. The insulating brick is composed of a diatomaceous earth, which is one of the best nonconductors of heat known. This earth which is mixed with ground cork, is molded into a brick form and fired. The cork burns, and as a result a porous brick is obtained.

MOTOR-OPERATED BRAKE.—A reversible shoe brake operated by a special squirrel cage-type, polyphase, torque motor, is illustrated and described in a 4-page pamphlet recently published by the Cutler-Hammer Mfg. Co., Milwaukee. The construction of the brake is simple. A small pinion on the motor engages with a toothed sector which is linked to the brake shoe. When the motor is connected to the line it revolves until the brake is released. It then maintains the brake in the released position until power is disconnected. The brake, developed to fulfill an existing demand for an alternating-current brake which would operate quietly, positively and give smooth retardation, is especially adapted for use on elevators and hoisting machines.

STEAM TABLES.—The fourth edition of this handbook of steam tables for condenser work, has just been published by the Wheeler Condenser & Engineering Co., Carteret, N. J. The booklet discusses various phases of condenser work. It also includes a discussion of the mercury column, the errors in such measurements, and constants for their correction. Three separate steam tables are given in the handbook. They are: Independent variable, vacuum, properties of saturated steam from 29.8 inches vacuum to atmospheric pressure; independent variable, temperature, properties of saturated steam from 32 degrees Fahr. to 212 degrees Fahr. Independent variables, gage pressure and absolute pressure, properties of saturated steam from 0 pounds gage pressure to 200 pounds gage pressure.

PUNCHING AND SHEARING MACHINERY.—The Long & Allstatter Co., Hamilton, O., recently issued a complete 303-page catalog devoted to its line of metal working machinery. This company's line of tools has been developed in more than half a century of manufacture. The catalog is well illustrated and complete specifications of a large number of machines are given. These comprise punching and shearing machinery for practically every purpose. Many tables are also included. These comprise, sheared area of holes, circumferences and areas of circles from $\frac{1}{8}$ to 5 inches in diameter, weights of of flat rolled steel, United States standard gage for sheet and plate iron and steel, Birmingham wire gage, weights of one foot of round and square steel of various sizes, weights of flat steel in pounds per lineal foot and decimals of an inch and of a foot.

HOISTS.—The General Electric Co., New York, is circulating an attractive booklet containing a treatise on a grab-bucket electric hoist. The hoist is of the monorail type, which by the use of a single machine will transfer its load from the barge or car, to any place in the factory or yard where the track runs. The bucket with which it is equipped ranges in capacity from $\frac{1}{2}$ cubic yard to $1\frac{1}{8}$ cubic yards. The hoist is made of either structural steel or steel castings, and is suspended from two trucks which support and carry the entire mechanism. The bucket is operated by three ropes which are anchored to two sets of drums. One rope opens and closes the bucket and is anchored to the lacing drum. The other two ropes hold the bucket when closing or opening. The two sets of drums are driven by separate motors through triple reduction gears. The pamphlet contains many diagrams and gives a number of illustrations showing the hoist in action.

TRANSFORMERS.—The General Electric Co., Schenectady, N. Y., is circulating a bulletin in which oil insulated and water cooled transformers are described and illustrated. Both transformers are equipped with disk coil windings with interleaved high and low voltage members. The coils are circular in form. A high resistance to abnormal voltage stresses is afforded by the division of the windings into a large number of sections. The sides of the coils are open to the oil currents and no insulating nor supporting parts cover any conductor parallel to its length. The tanks for water-cooled transformers are made of steel plate with welded seams. The water-cooling coil consists of lap-welded wrought iron pipe, wound helically into a single unit with the turns properly spaced and supported. An illustration of an outdoor substation with combination water-cooled transformers, 33,000 to 2300 volts capacity is shown.

STARTERS AND SWITCHES.—The General Electric Co. is distributing two 6-page folders devoted to automatic starters for direct current motors and drum-type switches for throwing small alternating or direct current motors across the line. The starters are especially recommended for the control of industrial motors driving centrifugal or reciprocating pumps, air compressors, blowers, fans, belt conveyors, line shafting, etc. The remote-control starters may be operated either by a float switch, single-pole knife, pressure governor, pressure switch, snap switch or push button station. The bulletin reproduces several photographs of the automatic starters themselves and shows several of them in actual use. It completely describes the starter in all its details and presents sizes, voltages, and other specifications. The drum-type switches are designed for the control of small alternating current or direct current industrial motors which can be thrown directly across the line without the use of the starting resistance. The size of the motor that can be so started depends upon its characteristics and the limitations set by the power company. The leaflet describes several varieties of switches made by the company; reproduces photographs of the switches themselves and presents diagrammatic views showing their operation.

INDUCTION FURNACES. — A booklet setting forth the merits of the Northrup-Ajax high frequency induction furnace as adapted in small units for laboratory use and scientific investigation has been issued by the Pyrolectric Instrument Co., Trenton, N. J., manufacturers of pyrometric and electric precision instruments. The Northrup-Ajax furnace, which presents a radical departure from the usual furnace practice, was developed, the booklet explains, primarily for the heat treatment of materials where quantity production is contemplated, but in small units constitutes an ideal form of laboratory furnace. The smaller units are designed for single phase operation and are said to be extremely flexible in both construction and operation. The furnace embodies the first employment of oscillatory currents for the generation of heat, and by reason of the highly effective induction possible, without the interlinking of an iron-magnetic with an electrical circuit, currents can be set up in the containing crucible in the case of a non-conducting melt, or in the melt itself if it has sufficient conductance to permit the flow of currents. The special characteristics of the furnace, its adaptability, the equipment and types and sizes are set forth in detail and the book is clearly illustrated showing the furnace and its various parts.

ROTARY GAS EXHAUSTERS.—In a well illustrated, 40 page catalog, gas exhausters built by the P. H. & F. M. Roots Co., Connersville, Ind., are described in detail. The gas exhausters and boosters built by this company are employed extensively for pumping gas. Briefly described, an exhauster has a suction or inlet pressure slightly less than atmospheric pressure, while the suction of a booster is greater than atmospheric. At present there are four distinct fields of application for these gas pumps, including the installation of foul gas exhausters in illuminating gas works to handle the gas as it comes from the retorts. Gas boosters take a clean gas from the holder and compress it to a pressure up to 10 pounds per square inch for the purpose of distributing it into the city mains. Gas exhausters for by-product coke ovens are foul gas exhausters on a large scale, with the added difference that both suction and discharge pressure differences are considerably greater than in municipal gas plants. The fourth field is that of handling noncorrosive gases for any pressure difference up to 10 pounds per square inch. Various types are illustrated by halftones and line drawings. Tables of sizes and capacities are included and rotary blast gates and flexible couplings also are described. Charts are given relating to the proportioning of gas pipes, etc.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$6.40
Mesabi Bessemer, 55 iron	6.15
Old range non-Bess., 51½ iron	5.65
Mesabi non-Bess., 51½ iron	5.50

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.10c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.24c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.00c to 4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chicago	5.52c
No. 10 blue anl. sheets, Cleveland	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl. sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cincinnati	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sheets, Detroit	5.48c
No. 28 black sheets, Chicago	6.27c
No. 28 black sheets, Cleveland	6.42c
No. 28 black sheets, Cincinnati	6.48c
No. 28 black, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.74c
No. 28 galv. sheets, Chicago	7.52c
No. 28 galv. sheets, Cleveland	7.67c
No. 28 galv. sheets, Cincinnati	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.59c
No. 28 galv. sheets, Buffalo	7.70c
Hoops, Cleveland	4.92c
Hoops, Detroit	4.98c
Hoops, Buffalo	4.95c
Cold rolled sheets, Buffalo	6.45c
Cold rolled steel	list and 10

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$23.00 to 23.50
Bundled sheets, Pittsburgh	22.00
Bundled sheets, Cleveland	26.00 to 27.00
Bundled sheets, Buffalo	24.00 to 25.00
Boiler plate, cut, No. 1, Chicago	28.00 to 28.50
Boiler plate, cut, No. 1, St. Louis	26.50 to 27.00
Frogs, switches, guards, St. Louis	28.50 to 29.00
Frogs, switches, guards, Chicago	29.00
Heavy melting steel, Pittsburgh	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chicago	29.00
Heavy melting steel, Cleveland	29.00
Heavy melting steel, Cincinnati	28.00 to 28.50
Heavy melting steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.00
Heavy melting steel, St. L.	28.50 to 29.00
Heavy melting steel, Birmingham	27.00 to 28.00
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pittsburgh	26.00
Baled sheets, Chicago	29.00
Knuckles, couplers, Chicago	34.00
Knuckles, couplers, St. Louis	33.00 to 33.50
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. crops, eastern Pa.	39.00
Low phos. guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Springs, Chicago	34.00
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	32.50 to 33.00
Steel rails, old, Birmingham	28.00 to 30.00
Stove plate, Chicago	28.00 to 28.50
Stove plate, Cincinnati	22.50 to 23.00
Stove plate, St. Louis	25.00 to 26.00
Stove plate, N. J. points	27.25
Stove plate, Birmingham	24.00 to 25.00
Stove plate, Buffalo	27.50 to 28.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	26.50 to 27.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$7.50
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York (r. and w.)	7.50
Philadelphia (r. and w.)	6.60
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70
Duluth, Minn., to:	
Minneapolis, St. Paul	$1.60
Mayville, Wis.:	
Minneapolis, St. Paul	$2.20

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	56.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Angle bars, iron, Chicago	39.00
Angle bars, steel, St. Louis	32.00 to 32.50
Angle splice bars, St. Louis (iron)	37.50 to 38.00
Arch bars, transoms, Chicago	45.00 to 46.50
Arch bars and transoms, St. Louis	45.50 to 46.00
Busheling, No. 1, Cleveland	30.50 to 31.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling, No. 1, Cincinnati	26.00 to 26.50
Busheling, No. 1, Chicago	30.50 to 31.00
Busheling, No. 2 Chgo.	21.50 to 22.50
Busheling, No. 1, St. Louis	30.50 to 31.00
Cast borings, New York	16.25 to 16.75
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast borings, Cleveland	18.50 to 19.00
Cast borings, Cincinnati	17.00 to 18.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 18.00
Cast borings, Chicago	18.50 to 19.00
Cast borings, St. Louis	18.50 to 19.00
City wrought, long, N. Y.	30.00
Cut forge, Chicago	32.00 to 32.50
Forge flashings, small, Cleveland	28.00 to 29.00
Forge flashings, large, Cleveland	27.50 to 28.00
Forge No. 1, eastern Pa.	28.00 to 29.00
Grate bars, Buffalo	27.50 to 28.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	27.25
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	34.00 to 35.00
Iron rails, St. Louis	38.50 to 39.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	18.00 to 18.50
Machine turnings, Cleveland	18.50 to 18.75
Machine turnings, Buffalo	17.00 to 17.50
Machine turnings, N. Y.	16.25 to 16.75
Machine turnings, Pittsburgh	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birmingham	16.00 to 17.00
Machine turnings, Chicago	17.50 to 18.00
Machine shop turnings, St. Louis	18.50 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	27.50 to 28.00
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mach. cast, No. 1, Buffalo	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt. No. 1, east Pa.	34.00
Railroad wrgt. No. 1, Cincinnati	33.50 to 34.00
Railroad wrgt., No. 1, Cleveland	34.00
R. R. wrought, No. 1, Pittsburgh	34.00
Railroad wrgt., No. 2, Chicago	32.00 to 32.50
Railroad wrought, No. 1, Chicago	33.50 to 34.00
R. R. wrought, No. 1, Birmingham	31.00 to 34.00
No. 1 yard wrought, Eastern Pa.	33.00
No. 1 bushelings wrgt., East. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. Louis	33.50 to 34.00
Railroad wrought, No. 2	32.50 to 33.00
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, East. Pa.	33.00
Wrought pipe, ungraded, East. Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turnings, East. Pa.	24.00
Heavy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, East. Pa.	39.00
Steel car axles, Birmingham	38.50 to 40.00
Steel car axles, Pittsburgh	46.50
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, East. Pa.	46.50
Steel car axles, Chicago	46.50
Shafting, St. Louis	38.00 to 39.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	$29.00
Car wheels (steel), Pittsburgh	34.00 to 35.00
Car wheels, East. Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	29.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birmingham	27.50 to 29.00
Cast, No. 1, Birmingham	31.00 to 34.00
Cast No. 1, cupola, East. Pa.	34.00
Cast, No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Cincinnati	33.00 to 34.00
Cast, 1, heavy, New York	32.25 to 32.50
Cast, 1, machy., New York	32.25 to 32.50
Cast, No. 1, Chicago	34.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	32.00 to 32.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, East. Pa.	29.00
Malleable, cupola, East. Pa.	33.00
Malleable, railroad, Chicago	34.00
Malleable, agricultural, Chicago	33.00 to 33.25
Malleable, railroad, St. Louis	32.00 to 32.50
Malleable, agricultural, St. Louis	31.00 to 31.50

MISCELLANEOUS USES

Boiler punchings, Chicago	36.00 to 36.50
Reroll. rails, 5 ft. and over, Pitts.	34.00
Reroll. rails, 5 ft. and over, Chi.	34.00
Reroll. rails, 5 ft. and over, E. Pa.	34.00
Reroll. rails, 5 ft. and over, St. L.	33.50 to 34.00
Reroll. rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birmingham	37.50 to 38.50
Locomotive tires, Chicago	45.50 to 46.50
Locomotive tires, St. Louis	43.50 to 44.00